THE REPORT OF THE COMMITTEE

ON

THE INDIGENOUS SYSTEMS OF MEDICINE

MADRAS

Part I—The Report with Appendices

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From

KHAN BAHADUR

MUHAMMAD USMAN SAHIB BAHADUR, B.A., M.L.C.,

Chairman of the Committee on the Indigenous Systems of Medicine, Madras.

To

THE SECRETARY TO THE GOVERNMENT OF MADRAS,

MINISTRY OF LOCAL SELF-GOVERNMENT.

S r,

I have the honour to forward herewith the Report of the Committee on the Indigenous Systems of Medicine appointed under G.O. No. 1351, P.H., dated 17th October 1921.

I have the honour to be,

Sir,

Your most obedient servant,

MUHAMMAD USMAN,

Cha rman of the Committee on the Indigenous Systems of Medicine.

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CHAPTER I.—INTRODUCTORY.

Reference and Procedure.

We, the Members of the committee appointed by the Government of Mad as under G.O. No. 1351, P.H., dated the 17th October 1921*, "to report on the question of the recognition and encouragement of the indigenous systems of medicine in vogue in this Presidency," have the honour to submit the following repor .

2. The declared object of the Government in ordering the present enquiry was "to afford the exponents of the Ayurvedic and Unani systems an opportunity to state their case fully in writing for scientific criticism, and to justify State-encouragement of these systems." With this end in view, a questionnaire was prepared in English (Appendix II), translated to Sanskrit, Urdu and the chief vernaculars of the Presidency and sent round to all persons interested in this question. The response was full and varied ; no less than 183 replies, written in English, Sanskrit, Urdu, Tamil, Telugu, Malayalam, Kanarese and Oriya, were received from all over India, including Indian States. The names of our correspondents and other details are found in Appendix III. These written evidences were all investigated by special sub-committees constituted for the purpose, with the Secretary to the committee as the Secretary of each sub-committee. The constitution of the sub-committees is given in Appendix IV. Forty representative witnesses were orally examined in Madras during the last week of September 1922 ; their names and other details are found in Appendix V. A special sub-committee consisting of the Chairman, the Secretary and Dr. A. Lakshmipathi toured all over India, visiting important centres of the indigenous systems of medicine and conferring with the leading exponents of these systems and other persons interested in their promotion. The details of this tour are given in Appendix VI.

3. The first question that we addressed ourselves to was to decide whether the indigenous systems of medicine were scientific or not. The Secretary furnished us with a memorandum (Appendix I) reviewing this question in all its bearings ; and we agree in the main with his two general conclusions, viz., that, (1) from the standpoint of Science, the Indian systems are strictly logical and scientific and (2) from the standpoint of Art, they are not self-sufficient at present, especially in the surgical line, though in the medical line, they are, generally speaking, quite self-sufficient, efficient, and economical. We are also in general agreement with the arguments on which these conclusions are based ; as however the discussion relating to the scientific aspect of the problem is necessarily somewhat technical in nature, we do not consider it profitable to deal with it here but would prefer to refer all interested in the question to Appendix I. We however consider it necessary to deal in some detail with the value of the Indian systems viewed from the practical standpoint of Art.

4. It is perhaps just as well that we state at the very outset that, except where there is a specific indication to the contrary, all our general observations and recommendations are meant to be equally applicable to all schools of Indian medicine generally such as the Ayurveda, the Siddha ond the Unani, no matter from what source or sources the illustrations are drawn in regard to any particular conclusion ; and having regard to the views of our experts as to the common foundations of all these three schools, we have thought it best to consider them all as one triune whole, rather than as so many isolated and independent entities ; for we have it on the high authority of Janab Hakim Ajmal Khan of Delhi that Arabian medicine was founded on Ayurveda (vide Appendix I—Additional note on the Unani system) ; and it is well-known that the Siddha and the Ayurveda have very many things in common including the Thridhatu physiology and the Thridosha Pathology.

The Indian systems, viewed from the standpoint of Art.

5. It will be convenient to consider the achievements of medicine (whether Indian, European or any other) under its two broad divisions, viz., Medicine (which will include not only general medicine but also special medicine such as treatment of the diseases of women and children, mental diseases, toxicology, etc.), and

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* Vide Appendix X.

Surgery (which will include not only general surgery but also special surgery, such as midwifery, ophthalmology, and the like). That, in both of these divisions, Ayurveda achieved great things very early in the history of civilization is an undeniable historical fact ; as the Calcutta University Commissioners truly observe in their Report (Vol. V, page 58) "the ancient system possessed an imposing treasure of empirical knowledge and technical achievement, which cannot be safely ignored even in these days of rapid progress." In the department of medicine few will be disposed to question the high achievements of the Indian systems, because it is a matter of common observation that even in their admittedly decadent condition of the present day, they are satisfying in their own way the medical needs of nearly 90 per cent of our population ; there are however people who are apt to think poorly of the past of Indian surgery because its present is so poor ; to these the following extracts from the Encyclopædia Brittanica (Vol. XXII, page 672, 9th edition) cited by Dr. Kaviraj Jamini Bhushan Roy, M.A., M.B.C.M., F.C.U., of Calcutta, in his written evidence, may afford instructive reading :— "In both branches of the Aryan stock, surgical practice, as well as medical, *reached a high degree of perfection at an early period.*

The correspondence between the Susruta and the Hippocratic collection is closest in the sections relating to the ethics of medical practice ; the description, also, of lithotomy in the former agrees almost exactly with the account of the Alexandrian practice as given by Celsus. But there are certainly some dexterous operations described in Susruta such as the Rhinoplastic) which were of native invention ; the elaborate and lofty ethical code appears to be of pure Brahmanical origin ; and the very copious materia medica (which included arsenic, mercury, zinc, and many other substances of permanent value) does not contain a single article of foreign source. Susruta describes more than one hundred surgical instruments made of steel. They should have good handles and firm joints, be well polished and sharp enough to divide hair ; they should be perfectly clean, and kept in flannel in a wooden box. They included various shapes of scalpels, bistouries, lancets, scarifiers, saws, bone-nippers, scissors, trocars, and needles. There were also blunt hooks, loops, probes (including a caustic-holder), directors, sounds, scoops and forceps (for polypi, etc.), as well as catheters, syringes, rectal speculum, and bougies. There were fourteen varieties of bandage. The favourite form of splint was made of chips of bamboo bound together with string and cut to the length required. Wise says that he has frequently used 'this admirable splint', particularly for fractures of the thigh, humerus, radius and ulna, and it has been subsequently adopted in the English army under the name of the 'patent rattan cane splint'. Fractures were diagnosed, among other signs, by crepitus. Dislocations were elaborately classified, and the differential diagnosis given ; the treatment was by traction and countertraction, circumduction, and other dexterous manipulation. Wounds were divided into incised, punctured, lacerated, contused, etc. Cuts of the head and face were sewed. Skill in extracting foreign bodies was carried to a great height, the magnet being used for iron particles under certain specified circumstances. Inflammations were treated by the usual antiphlogistic regimen and appliances ; venesection was practised at several other points besides the bend of the elbow ; leeches were more often resorted to than the lance ; cupping also was in general use. Poulticing, fomenting, and the like were done as at present. Amputation was done now and then notwithstanding the want of a good control over the hæmorrhage ; boiling oil was applied to the stump, with pressure by means of a cup-formed bandage, pitch being sometimes added. Tumours and enlarged lymphatic glands were cut out and an arsenical salve applied to the raw surfaces to prevent recurrence. Abdominal dropsy and hydrocele were treated by tapping with trocar, and varieties of hernia were understood, omental hernia being removed by operation on the scrotum. Aneurysms were known but not treated. Besides the operations already mentioned, the abdomen was opened by a short incision below the umbilicus slightly to the left of the middle line, for the purpose of removing intestinal concretions or other obstruction (laparotomy) ; only a segment of the bowel was exposed at one time ; the concretion when found was removed, the intestine stitched together again, anointed with ghee and honey, and returned into the cavity. Lithotomy was practised without the staff. There was a plastic operation for the restoration of the nose, the skin being taken from the cheek

adjoining, and the vascularity kept up by a bridge of tissue. The ophthalmic surgery included extraction of cataract. Obstetric operations were various, including Cæsarian section and crushing the foetus.

The medication and constitutional treatment in surgical cases were in keeping with the general care and elaborateness of their practice, and with the copiousness of their materia medica." Dr. Jamini Bhushan Roy proceeds to observe further that "even the up-to-date modern surgeons of to-day will be more up-to-date and modern if they will take the trouble to acquaint themselves with our learning on the subject. The chief difficulty is that this valuable learning of our ancients is contained in books written in Sanskrit, without a knowledge of which it is not now possible to get at originals ; another difficulty is that the texts are mostly aphoristic and require elucidation and elaboration by competent gurus, who are now unfortunately very few and far between. It is no doubt true that the art of surgery has now undergone decay but it can be easily revived. Though the art has decayed, it can be resuscitated and rendered efficient in practice, by conducting Ayurvedic research along right lines, and taking the aid of modern surgery and modern science generally, wherever they are useful."

Are Indian systems self-sufficient at present ?

6. This brings us at once to the consideration of the question whether, and if so, how far, the Indian systems are self-sufficient at present. Some claim that they are even now fully self-sufficient and that their followers are able, by purely medical means to cure all curable diseases, including those which the western-trained doctors classify as surgical ailments, and treat by surgical measures. This claim seems to us, however, to be a large order, more especially when we remember that Hindu medicine itself gave great prominence to surgery and that every student of Hindu medicine is still enjoined to study "Susruta Samhita"—a treatise primarily devoted to surgical ailments. The question cannot, however, be decided by mere argument. In the last resort, it has got to be proved by verifiable testimony in hospitals or elsewhere, where there are facilities for recording authentic clinical observations. There are, however, other exponents of indigenous systems, who though they claim that, very early in history, their systems reached a high level of real scientific and technical achievement even in such branches of medicine as surgery, midwifery, and ophthalmology, are nevertheless prepared to admit that, in the immediate present, it is necessary to utilize the services of the western system in these directions. They, however, entertain the hope that this phase is only temporary, and that, with the renaissance, consequent on State-encouragement, the Indian systems would soon become self-sufficient. That the science as well as the art of surgery had once reached a high level of perfection in ancient India may be freely admitted ; but can it be denied that the art has at present decayed o such an extent that it is not equal to the task of ministering to the surgical needs of our teeming millions ? When the question of providing adequate medical relief is at issue, it is not enough to show that ancient systems reached a high level of surgical or obstetrical excellence in the days of their ancient greatness ; harking back to the glories of the past has its uses ; but from the standpoint of providing adequate medical relief, however, the question of questions is whether the ancient art exists, here and now, as a living reality, and whether, like the art of the western-e s, it is equal to the task of dealing with, not merely medical ailments but with surgical, obstetrical and other ailments as well. In this connexion it is significant that even so enthusiastic an exponent of Hindu medicine as Dr. Mahamahopadhyaya Kaviraj Gananatha Sen, M.A., L.M.S., found it necessary to allude to the present state of Hindu medicine, in the following terms :—

"Whatever may have been the past glory of Ayurveda it would be self-decep ion on our part to think that we still sit on a high pedestal. The fact is unfortunately just the other way. The number of Ayurvedic Physicians in India is legion but soundly educated exponents of the ancient system are not numerous. Besides, there is yet a good deal of conservatism, which is contrary to the liberal spirit of Ayurveda and which must be overcome. Much of the old valuable literature has been lost and what exists is not often studied in a scientific spirit. If the sound

principles and methods of treating diseases with the time-honoured recipes of reliable efficacy were not there, the Ayurvedic system of medicine would have been dead by his time in the struggle for existence. So, let us not be slow in recognizing the crying need for reform. We may have once made great progress in surgery but we must confess that we now lag sadly behind . . . And even in the great departments of medicine and pharmacy which are our great pride and mainstay, we must work hard to demonstrate and utilize the principles of medicine that we have in our books. One may therefore be permitted to suggest that it is not in the interests of the public, the promotion of whose well-being must alone be our paramount consideration, to shut out *any* useful means of medical, surgical or other relief, no matter whether it is of the European or of any other denomination."

7. Even assuming for a moment that such branches of Indian medicine as surgery and midwifery were not merely the forgotten arts that they now are, but real, living, practices of their best days, is it in the interests of the public or the promotion of scientific knowledge generally that we should decline to benefit by the undeniable achievements of modern surgery ? Even granting for the sake of argument that the methods of diagnosis known to practitioners of the Indian systems are sufficient for their purpose, is it in the interests of humanity or of the advancement of learning generally, that we should decline to make such use as we can, of the laboratory methods of Western medicine, and taboo the use of such instruments of proven utility like the stethoscope, the microscope, the spectroscope, the microtome, the X-rays, the polygraph, the electro-cardiogram, the ophthalmoscope, the cystoscope, the bronchoscope, the epidioscope and the like ? Even assuming that the medical therapeutics of the Indian systems are efficient and sufficient for their purposes, is it in the interests of the public at large that we should decline to consider the value of electrical or radium therapy or the use of quinine in malaria, of emetine in dysentery and of antimony in kala azar, merely because they are introduced by the followers of Western medicine ? After all, is it necessary to be ever talking of rival systems of medicine, as though scientific truths can possibly vary with the orient of this, that or the other geographical unit? If the one-pointed search after truth is everywhere the aim of all scientific endeavour, there can be but one system—one without a second—of any science, whether it be physics, chemistry, biology, medicine or any other. Theories and hypotheses have been and can be many ; but truth is one ; it is neither eastern nor western but universal. It cannot be that water is H_2O in the West and something else in the east. Theories and methods of easterners may well differ from those of westerners and there may also be different schools and sub-schools of thought among the easterners and westerners themselves. Wherever knowledge is imperfect, as it undoubtedly is in medicine, such difference of opinion, theories and hypotheses are inevitable ; but, no true scientist—eastern or western—would ever reject a proposition, merely because it is advanced by one born or living in an orient different from his own ; if it is *proved* that the other view is better than his own, he would not have the least hesitation in loyally accepting it ; ever since the dawn of history there has been free and unrestricted communion between the East and the West in the domain of advancement of learning ; in medicine, as in other branches of knowledge, each has freely and joyously given to, and taken from, the other in the past ; even when kings were engaged in mortal strife, the men of medicine were freely fraternising as members of that universal brotherhood of knowledge and wisdom, which knows no distinctions of race, creed or community. The supreme object of all students of Medicine—eastern or western—is the maintenance of health, and prevention and cure of diseases. There is no better way of working towards the fulfilment of this object than to think in terms of the whole of humanity, and of no lesser unit, such as the European, the Asiatic and the like, which sometimes, so unfortunately, and may we say, so unscientifically, divide man from fellow-man, even in the colourless domain of science. For our own part, we would prefer to adopt the view that, in so far as the one common ideal of all systems of medicine is the preservation of health and prevention or cure of ill-health, there can really be but one system of medicine, of which the many existing 'systems' are but parts, each part being more appropriately looked upon as a special 'school' of thought rather than as an independent system of medicine. Consistently with this view, we would like to se

the future practitioners in India, no matter whatever denomination they belong to—Ayurveda, Unani, Sidha, European medicine or any other—being so schooled and trained as to be able to bring to bear on the problems of health and ill-health not only the expert knowledge of their own systems but, as far as practicable, the best that is in other systems also. It is this ideal that we have always placed before ourselves in framing our recommendations touching the future of our Indian systems of medicine.

State-Recognition and State-Aid.

8. As regards the question of State-recognition and State-aid, we fully recognize that the Government, as the trustees of public funds, are vitally interested in seeing that the money voted for the promotion of medical relief is not *knowingly* spent in the pursuit of erroneous practices ; we use the word 'knowingly' advisedly ; because it is possible that, unknowingly, money is spent on practices which will later on be found to be useless or even worse ; in the pursuit of an imperfect science like medicine it is inevitable that certain practices are more or less of the nature of experiments, honestly extolled to the skies one day but condemned on the next, because they were tried and found wanting. As the British Medical Journal warned the medical profession so long ago as 1911 " Remedies and Modes of Treatment, like systems of philosophy, or fashions in dress, have their little day and cease to be. Back numbers are grave-yards of departed theories, of which the various forms of quackery are the ghosts." So far as the allocation of public funds are concerned, it does not really matter whether a case of illness is called tuberculosis or rheumatism, attributable to certain specific germs and treated by methods based on that theory of causation ; or it is called rajayakshma or vata vyadhi, attributable to specific varieties of doshic derangements and treated by methods based on that theory ; but what does vastly matter is the question of cure or relief obtained—that is to say, the question whether this or that or the other system is effective in providing cure or relief of the particular diseases under reference, no matter whether the diseases are attributed to certain specific germs demonstrable by laboratory methods or to certain specific forms of doshic derangement ascertainable by clinical methods. It is difficult to see how we can give a definite answer in favour of one or other of the several schools or systems under reference, unless we have comparative statistical records of patients treated side by side by each of these systems either at our Presidency hospitals or any other institution where adequate arrangements can be made for the due maintenance of scientific records for purposes of comparative study.

Efficiency and Economy.

9. There are critics, however, who would object to such an arrangement on the ground that thereby we would be virtually recognizing that a *prima facie* case has been made out in favour of the Indian systems, while some go so far as to hold that this would really mean the handing over of our 'credulous' patients to the practice of dangerous quackery. So far as the latter objection is concerned, it is really a case of begging the question, and can only be advanced by people who have unscientifically condemned the Indian systems in advance without caring to test its claims with the open mind of the true scientist ; moreover, are these critics aware that among the poor 'credulous' folk whom they would protect from systems which, in their own minds, they have equated to quackery, there are persons of great light and learning in all walks of life—scientists of world-wide reputation, learned judges whose skill in weighing evidence has been extolled by eminent British jurists, distinguished statesmen, able administrators and great leaders of our legislatures, princes, zamindars and merchant-princes of all grades and many others noted for their deep thinking and sound judgment ? Then again, is not a *prima facie* case already made out in favour of the Indian systems by the noteworthy records of the few dispensaries of these systems that are now being maintained by non-governmental agencies in the different parts of the country ? A number of such institutions exist even in our own Presidency town ; and though greatly hampered for lack of State-recognition and sufficient funds, they are nevertheless holding their own against the comparatively well-financed dispensaries in the neighbourhood maintained by the State or the Corporation, and are popular among all sections of our people, besides being decidedly cheap, as may be seen from the records of a few

of these institutions, published in Appendix VII. Below we give a summary of the statistics of only one of them, viz., the Lee Chengalvaraya Naicker's Free Ayurvedic Dispensary, Vepery, Madras.

Total number of patients treated (from July 1921 to June 1922)—

Hindus	94,983	122,238
Eurasians	4,470	
Christians	19,200	
Muhammadans	3,585	
Average daily attendance	335	
Cost of medicine	Rs. 1,375–13–9	
Cost of maintenance	„ 3,765–14–9	
Average cost per head per day	„ 0–0–8	

The Superintendent of the institute observes further thus:—"The number of patients treated in this dispensary during the year 1921–22, viz., 122,238, includes minor urgical cases such as opening of abscesses, carbuncles, scraping of malignant and chronic ulcers of various types, extraction of foreign bodies from ear, nose, etc., and such other minor things that can be done easily.

We are obliged to handle these cases not because we have the necessary equipment and leisure to do so, but because of the importunity of the patients themselves who seem to believe that our ointments and applications cure them more speedily. Although we in some cases insist on the patients to go to allopathic hospitals for operation, they invariably go here again after operation for further treatment.

With my experience in the line I can confidently say that if more facilities are made available, we will not be less successful in surgical cases also."

10. It is instructive to compare the figures given above with the corresponding figures for Bauliah Naidu dispensary—the most popular among the dispensaries in Madras city worked on the western system and situated in the same neighbourhood as the Chengalvaraya Naicker's Ayurvedic dispensary referred to above—

Total number treated	37,626	
Total expenditure—		
Salaries	Rs. 3,385	7,058
Medicines	„ 3,453	
Miscellaneous	„ 220	
Average cost per head per day	0 3 0 (roughly)	
Do. for the Corporation Dispensaries of the city taken as a whole	0 6 2	

11. We have likewise the testimony of the results obtained in those State-recognized and State-aided institutions which are maintained by some of our Indian States notably, Travancore and Cochin, the former of which also maintains a Government Ayurvedic Medical College with a hospital and dispensary attached to it. Is this not valuable *prima facie* evidence, especially when we remember that no less than 170,641 cases (including 5,190 cases of poisoning, the treatment for which seems to be more or less a speciality in Malabar) were treated during the year 1920–21 in the grant-in-aid Ayurvedic institutions of the State, while 115 in-patients and 29,151 out-patients were treated during the same period at the State Ayurvedic hospital and dispensary, Trivandrum? Among the in-patients, 82·4 per cent were cured and 12·8 per cent relieved, while death-rate was as low as 0·9 per cent. Below, we give corresponding figures for the Government General Hospital and the Government Rayapuram Hospital, Madras, the reason for selecting these institutions for purposes of comparison being that they are to Western Medicine what the Trivandrum hospital is to Ayurveda, that is to say, they are centres of medical relief which act also as centres of medical education. In instituting this comparison we do not, of course, mean to suggest in the very least that strict comparisons can be made between the statistics of institutions that differ so much in size, staff, organization and so on; but unfortunately we have at present no other comparisons to institute.

—	Trivandrum Ayurvedic Hospital.			Government General Hospital, Madras.	Government Rayapuram Hospital, Madras.
Total number of in-patients treated	115			8,358	4,861
Total number of out-patients treated	29,151			60,648	53,783
Death-rate among in-patients ..	0·9 per cent.			6·99 per cent.	10·35 per cent.
	* RS.	CH.	CA.	RS.	RS.
Total cost of maintenance ..	12,588	5	5	6,82,924	2,31,324
Salaries—					
Medical officers				1,01,077	30,100
Nurses	1,667	23	2	74,581	24,177
Inferior servants				71,752	24,387
Medicine—					
European	9,000	0	0	75,622	22,798
Bazaar				6,712	1,091
Diet	428	0	0	1,19,960	59,028
Miscellaneous	1,717	9	0	1,36,685	92,541

12. The statistics given above do certainly afford clear evidence that the Indian systems are not only efficient as far as they go, but undoubtedly more economical than the western system. The following extracts from the written evidence of Dr. Kaviraj Gananatha Sen are also in support of the statements that we have made above :—

"As to the general efficacy of Ayurvedic treatment, I think there can be little doubt. In Calcutta, the great home of western culture, Ayurvedic practitioners thrive in a remarkable manner and are the strong rivals in practice of the Presidency surgeons and professors of the medical college. Not only in Calcutta but all over India learned Ayurvedic physicians stand out as fully the peers of their western colleagues, earning Rs. 500 to Rs. 1,000 per diem when their services are engaged by the ruling princes and nobility of India. Where there are well equipped Ayurvedic charitable dispensaries side by side with similar allopathic dispensaries in a town, the attendance in the former goes on increasing steadily to an extent which would seem to be incredible. The statistics of the Ayurvedic dispensaries in Madras and Calcutta would show this clearly.

In private practice the average Ayurvedic practitioner often does better than his western-trained brother. Besides, western-trained medical men very often request the services of their Ayurvedic colleagues in chronic intractable cases, not only among their patients but also among their own family members. This is every day experience with me and several of my colleagues in Ayurvedic practice. Hundreds of patients declared incurable and cured under Ayurvedic treatment would bear testimony to the unique success of Ayurvedic treatment. . . From records of some so-called incurable cases kept in my clinic, I am able strongly to assert that the efficacy of Ayurvedic treatment in reputed hands is so remarkable that all sections of people, the prince and the peasant, Indian and European, resort to it freely, I find, in my own practice, that I daily have to attend difficult cases in the houses of at least two or three allopathic doctors of Calcutta. This is not the experience of myself alone, but also of Ayurvedic practitioners trained purely on orthodox lines, many of whom still thrive as the favoured family physicians of the rich and the noble men of Bengal."

13. As regards the cost of treatment the same authority observes thus : "The cost of treatment, according to the indigenous systems, should be considered under two heads—

(1) Treatment of well-to-do people.
(2) Treatment of the poor.

For the former, the practitioners of both the western and eastern systems are in the habit of prescribing costly preparations ; but, on the whole, if the modern costly methods of diagnosis are taken into account, Ayurvedic treatment is certainly cheaper even for well-to-do patients.

* One Sircar rupee = Annas 15 and pies 9 only. One chakram = Pies 6 nearly. One cash = Half pie nearly.

(2) For the poor, the indigenous systems are by far the cheaper as there are plentiful supplies of Ayurvedic drugs available in every part of India and they are used mostly in the fresh form as juices, decoctions, etc., which eliminate costly pharmaceutical processes including the addition of spirits and bottling, labelling, advertisements, etc. . . . From the comparative statistics of the costs of treatment collected from the records of Ayurvedic charitable dispensaries in Calcutta and Madras, it has been found out that the average cost is about 5 to 6 pies per head per day and would never exceed 9 pies."

The duty of the State towards the Indian Systems of Medicine.

14. In any case it does not certainly seem to us to be in the interests of science or suffering humanity to refuse to explore to the full the possibilities of systems of medicine, which have been referred to in the following terms by so competent a body of critics as the members of the Calcutta University Commission presided over by Sir Michael Saddler—

" That the entire system of indigenous medicine as practised in India affords a fruitful field of study and investigation, is indeed clear from the testimony of many competent authorities. Dr. Hoernle, in the preface to his 'Studies in the Medicine of Ancient India,' observes :—Probably it will come as a surprise to many, as it did to myself, to discover the amount of anatomical knowledge which is disclosed in the works of the earliest medical writers of India. Its extent and accuracy are surprising, when we allow for their early age, probably the 6th century before Christ, and their peculiar methods of definition. In these circumstances the interesting question of the relation of the medicine of the Indians to that of the Greeks naturally suggests itself. The possibility at least of a dependence of either on the other cannot well be denied when we know as a historical fact that two Greek physicians, Ktesis about 400 B.C. and Megasthenes about 300 B.C., visisted or resided in Northern India.

Dr. Neuberger in his 'History of Medicine' writes : "That Greek medicine adopted Indian medicaments and methods is evident from the literature. The contact between the two civilizations first became intimate through the march of Alexander and continued unbroken through the reign of the Diadochi and the Roman and Byzantine eras. Alexandria, Syria and Persia were the principal centres of intercourse. The Indian physicians' means and methods of healing are frequently mentioned by Graeco-Roman and Byzantine authors as well as many diseases endemic in India but previously unknown. During the rule of the Abbasidies, the Indian physicians attained still greater repute in Persia whereby Indian medicine became engrafted upon the Arabic, an effect which was hardly increased by the Arabic dominion over India. Indian influence in the guise of Arabic medicine was felt anew in the west. The apparently spontaneous appearance in Sicily in the 15th century of Rhino-plastic surgery bespeaks a long period of Indo-Arabian influence. The plastic surgery of the 19th century was stimulated by the example of Indian methods, the first occasion being the news derived from India that a man of the brickmakers caste had, by means of flap from the skin of the forehead, fashioned a substitute for the nose of a native."

Similar testimony is furnished from a very different quarter ; the late Surgeon-General, Sir Pardey Lukis, sometimes Principal of the Medical College, Calcutta, and later Director-General of the Indian Medical Service, said in the course of one of his public utterances :—" I wish to impress upon you most strongly that you should not run away with the idea that everything that is good in the way of medicine is contained within the ringed fence of allopathy or western medicine. The longer I remain in India and the more I see of the country and the people, the more convinced I am that many of the empirical methods of treatment adopted by the vaids and hakims are of the greatest value and there is no doubt whatever that their ancestors knew ages ago many things which are nowadays being brought forward as new discoveries. For instance, during the last few years, there has been a considerable amount of talk about what is known as depurating, that is to say, the depriving of the system of salt. This arose from certain experiments carried out by Widal and Javal, as a result of which it is recognized that in all cases of dropsy the greatest benefit can be obtained by restricting your patients to an entirely salt free dietary.

There is nothing new in this. This was known thousands of years ago in the east, and any hakim would have told you long before Widal or Javal made their experiments that salt is contra-indicated in all dropsical affections."

Equally emphatic is the assertion of Dr. Harold Brown, formerly of the Indian Medical Service, that 'there are a great many indigenous drugs which are of extreme utility but are little known to the students of western medicine'. No arguments are needed to establish the position that a system which is described in these terms by some of the most distinguished exponents of the western system of medicine should be cultivated in an Indian University from the point of view of a historical, critical and scientific student.

15. With this considered opinion of the Calcutta University Commission, we are in hearty agreement; there is also another decisive reason why we consider that it is incumbent upon the State to explore to the full the possibilities of Indian medicine and it is this; under the present conditions of India, medical relief along western lines is believed to reach but a small 10 per cent of our teeming millions; so far as our own Presidency is concerned the extent of medical relief provided or aided by the State is believed to be higher than in many other tracts; but even here 'the problem of bringing medical relief within easy reach of the rural population remains unsolved', as observed by the Government in their review of the last triennial report of our civil hospitals and dispensaries; the great scarcity of western medical relief in rural areas generally, and in the Ceded districts in particular, is well brought out by annexure I attached to the abovementioned review (G.O. No. 106, P.H., dated 8th February 1921) which we reproduce below:—

Annexure I.

Extent of medical relief available in the several districts with reference to area and population.

District.	Number of medical institutions.	Number of square miles served by a medical institution.	Population served by a medical institution.
1. Madras	19	1·4	27,298
2. Tanjore	44	84·7	53,697
3. Tinnevelly	31	140·4	57,762
4. The Nilgiris	7	144·1	16,945
5. Chingleput	19	161·7	65,197
6. Malabar	34	170·4	88,679
7. South Arcot	24	175·3	98,440
8. Madura	28	175·6	69,030
9. Ramnad	27	179·0	61,424
10. South Kanara	19	211·6	62,907
11. Godavari	25	214·5	56,995
12. Salem	28	225·0	63,096
13. North Arcot	21	234·3	93,379
14. Trichinopoly	19	259·7	110,896
15. Kistna	22	268·5	90,797
16. Guntur	21	273·1	80,836
17. Nellore	29	274·9	45,798
18. Ganjam	28	299·3	79,332
19. Coimbatore	23	312·9	92,025
20. Chittoor	16	354·8	87,876
21. Bellary	16	357·1	60,590
22. Kurnool	17	415·9	55,012
23. Vizagapatam	38	453·2	83,943
24. Anantapur	13	516·8	74,094
25. Cuddapah	10	589·2	89,399

16. Now the cost of providing even such extremely insufficient medical relief is Rs. 56,63,845 according to the latest available official figures. Under the existing condition of our acute financial distress when it is becoming increasingly difficult for the State to maintain in good condition even the few institutions already established, the question of extending the costly western system of medical relief to the whole of our population is beyond the wildest dream of even the most optimistic among us, let alone those who cannot, Micawber-like, arrange their programme in the undying hope of something turning up from some quarter or other. Under these circumstances, is it not incumbent upon the State to explore to the full the possibilities of

our Indian systems which, as we have shown before, appear so temptingly econ omical and efficient as far as they go, and through which alone, if at all, the State may reasonably hope to bring m edical relief within the easy reach of the whole of our population and not merely of a pitiable fraction as at present ?

17. After all, can it be right on any principle to continue to treat the Indian systems with neglect and even disfavour where really grateful recognition is due, seeing that without costing a pie to the public treasury they are taking upon themselves from 80 to 90 per cent of the work which the State should have undertaken, while nearly 57 lakhs are spent in providing official medical relief to the remaining 10 to 20 per cent of our population and that too mostly in urban areas ? Can it be right on any principle to continue to ignore systems, which would have been, by now, wiped out of existence, if they had not in them certain inherent excellences which make them live and even thrive in a limited way under the most unfavourable circumstances which they are now subjected to—on the one hand, a cold and even chilling neglect by the State and others who should have been their natural and grateful patrons, while, on the other, there is the severe handicap from unequal competition with a 'rival' favoured with the monopoly of State-recognition and State-support ? Under the circumstances, the wonder is not that the Indian systems have decayed, but that they are living at all. Is it in the interests of science or suffering humanity, we ask, to continue to ignore systems whose achievements even under these most depressing conditions are such that they are in demand not only by the vast majority of our masses who would, but for their existence, go without any medical aid at all but also by persons of light and learning in all walks of life including some practitioners of the western system itself ? It does not at all seem uncommon for even western-trained doctors in Calcutta, Delhi, Lahore and elsewhere to call in the practitioners of the Indian systems in the treatment of their own private cases (especially the chronic ones) as also of the patients in their own families. This is a point on which our Calcutta witnesses laid great stress, as may be seen from the evidence of Kaviraj Gananatha Sen cited already in paragraph 12, where he says 'I find in my own practice that I daily have to attend difficult cases in the houses of at least two or three allopathic doctors of Calcutta. This is not the experience of myself alone but also of Ayurvedic practitioners trained on purely orthodox lines many of whom still thrive as the favoured family physicians of the rich and the noblemen of Bengal.'

18. We do not think it is necessary to discuss at any length the general efficacy of the Indian systems in the medical line ; we have received overwhelming evidence in support of their claim both from private and public sources ; the statistics of some of the public institutions are published in appendix VII ; we have received numerous testimonials from persons of light and learning in all walks of life, testifying to the great benefit they received from the Indian systems, and in many cases after they were given up as hopeless by western-trained doctors. Even those who are most rabidly against the Indian systems will have to admit, we believe, that there are a good many drugs and other valuable remedies (such as the well-known Malabar treatment for chronic rheumatism, paralysis and vata diseases generally) which are well worthy of study by any physician who cares at all (and who does not ?) for the relief of human suffering or the progress of science.

19. There are many well-meaning persons, however, who, while admitting readily and even enthusiastically the truth of the above proposition, are nevertheless of opinion that it is not necessary to study the science of Indian medicine to know the use of these remedial measures, and that practitioners of western medicine may well be trusted to use them in the light of their own pathology, diagnosis and the like ; they are ready to incorporate into their pharmacopœa such of these indigenous drugs and methods of treatment which are found efficient in practice but have no patience with the rest of the Indian systems themselves ; in other words they would take in the art but would shut out the science ; they would gladly take in the sweet fruits which the tree of Indian medicine bears but would starve and even cut down the tree itself. This, to our minds, seems a most illogical and unscientific procedure, which, if really put into practice, may easily be attended with dangerous and even disastrous consequences, more especially in the case of those highly potent remedies used by practitioners of the Siddha system ; such use of indigenous drugs and

remedial measures would be as unscientific and dangerous a quackery as, for instance, the use of vaccines, sera, and hypodermic remedies by Ayurvedists who have not learnt the science on which their use is based, though, by a little practice, they may easily learn the art of hypodermic or even intravenous injections. If this is borne in mind one can easily understand why Ayurvedists object so strongly to the value of Ayurvedic or indigenous drugs being tested and judged by persons who have not made any understanding study of Ayurveda. The essentially unscientific nature of the use of Ayurvedic remedies by persons who have not studied the science of Ayurveda may become clear by the following remarks on the 'use of drugs,' taken from the written evidence of Dr. Kaviraj Gananatha Sen :—" As to the use of drugs, I should like to note that the Ayurvedic Materia Medica and Therapeutics is replete with the descriptions of the action of drugs expressed in the terms of the Tridosha theory as well as in clear statements about their effects on certain organs of the body and their uses in certain diseases. Of course these descriptions in terms of the Tridosha theory and other technical names (as Vikari, Vyavayi, etc.) are a sealed book to those who have not learnt to translate them into 'Physiological action' as the West now understands it. The consideration of drugs according to Rasa or Taste, Birya (Veerya) or 'heating' or 'cooling' effect, Vipaka or the chemical inversions undergone, Guna or general qualities specifying the physiological effects, and Prabhava or the inexplicable selective action of drugs in particular diseases, is an admirable feature of Ayurvedic Materia Medica worth the careful study of any scientific worker.

Here, I would strongly repudiate the sweeping charge made in some quarters that Ayurvedic drugs are used empirically. In fact, there is less empiricism in Ayurvedic practice than we find in the practice of Western medicine. Besides there seems to be a strange idea in some quarters that the success of the Ayurvedic physician depends much on the high efficacy of individual indigenous drugs. This idea, the main spring of action in the so-called "researches in indigenous drugs" of which we hear so much in these days, is simply erroneous. The success of the Ayurvedic physician is due not to the 'charm' of this or that drug but to his clear grasp of the *Doshic* derangement and his selected and well-considered treatment of that derangement, according to well-defined principles of Therapeutics.

As to the form in which medicines are given I should like to point out that fresh juices, powders, infusions, and decoctions are always preferred to preserved drugs in view of the 'Vitamines' and the other active principles found only in fresh drugs. The use of minerals in the form of very finely powdered (often impalpable) oxides and colloids is also a special feature of Ayurvedic practice, which superficial observers have occasionally tried to belittle by their meagre but vaunted knowledge of chemistry. They seem to forget that there are numerous unassailable facts in Therapeutics, which present-day chemistry is not yet advanced enough to explain.

It should be further remembered that there are hundreds of drugs—vegetable, animal and mineral, used widely by Ayurvedic practitioners which their know-all Western trained rivals have not even heard of yet. Some of these are: black and red sulphides of mercury (Kajjali, Rasaparpati, Rasasindhura, Makaradhwaja, etc.), various form of iron-oxides (Loha-Bhasma) which, by the way, are far more assimilable and much less constipating than Western preparations of iron, tin-oxides and chlorides (Vangabhasma), zinc carbonates (Kharparabhasma), Shilajatu, a valuable bituminous drug highly effective in urinary diseases, Gorochana, the gallstones often found in the bovine gall-bladder and hundreds of vegetable drugs like Semi-carpus anacordium (Bhallataka), Achirantes aspera (Apamarga), Triphala (three myrobalans), etc. But to the bigoted and prejudiced medical man trained in Western medicine alone these remain a closed subject because he would never care to study them under proper guidance."

20. Without such a study, however, the use of remedies of Indian systems by practitioners of Western medicine may really amount to, as we said before, unscientific and dangerous quackery; as has been well pointed out by Dr. Gananatha Sen at the very beginning of the quotation cited above, it is necessary for the scientific and safe use of drugs and other remedial measures used by the practitioners of the Indian systems that the fundamental principles at least, such as the Tridosha theory, the theory of Rasa-Veerya-Vipaka-Prabhava and so on, on which the use of these

drugs is based, should be properly understood. We are therefore clearly of opinion that to practise the Art of medicine without a study of the science on which the Art is based is undoubted quackery, whether it is undertaken by the followers of Indian or European medicine who would dabble in the use of the therapeutical measures of the European and Indian medical Art respectively without a knowledge of the Science on which such use is based; quackery, whether practised by the followers of the Indian or the European system, is always undesirable, frequently dangerous and sometimes even disastrous.

Causes of decay.

21. We are also clear that the chief causes of the present decadent condition of the Indian systems are mainly two :—

(1) Lack of recognition and support by the State, and following the example of the State by other agencies (Princes, Zamindars, Local bodies, Universities, etc.) who were their natural patrons in the past but have now ceased to be except in a few instances.

(2) The establishment of the Western system of medicine as *the official* system, recognized and supported by the State and enjoying the sole monopoly of State patronage.

What is the natural and inevitable effect of such a state of affairs? The best brains of the nation who are attracted to the study of medicine have two courses open before them; on the one hand there is the study of Western medicine which gives them a State-recognised status and a good chance of entering into the service of the State, the Local Boards, the Railways and the like; as private practitioners, there is the prestige and the halo of State-recognition and scientific training about them and they are generally valued both officially and unofficially at as many rupees per day as the poor practitioners of the Indian systems are valued at annas; on the other hand, the prospects of those who would take up the study of Indian medicine are dreary and discouraging to a degree; it is true that, here and there, we have eminent practitioners who would do credit to any nation and whose princely incomes would make the mouths of even the luckiest of the Western doctors water; but these must necessarily be persons of exceptionally rare ability; to the great majority, however, the prospects are cold and dreary; in the eye of the State and the Law, they are more or less 'Quacks'; there is, of course, no question of their entering the service of the State, the Local Boards, etc.; they may carry on private practice but at their own risk, and if anything goes amiss, everything is presumed against them as, under similar circumstances, the presumption would have been all in favour of the practitioner if he happened to be of the fold of Western medicine.

22. Is it any wonder that, under such circumstances, the Indian systems have progressively suffered decay and that a sufficient number of the best brains of the nation are not attracted to it? Do we not see a similar feature in the field of literary pursuits also, where a good many of our best men prefer the study of English Literature to that of Sanskrit or Arabic, because they find that the same amount of mental training or intellectual equipment in the former, which equates them to professorships of English in the Indian Educational Service valued from eight to twenty hundred rupees a month, will only result, in case they pursue the study of Sanskrit or Arabic, in equating them to those exalted offices in the subordinate educational service held by our poor Pundits and Munshis passing rich on rupees forty or fifty a month. The case of the Indian systems of medicine, is, in one respect, even worse than that of the Indian literature; for the latter have at least some sort of official recognition though a very poor one, while, in the case of the former, they are either not recognised at all or recognised as 'quackery.'

23. That the European system fully and abundantly deserved State-recognition and State-patronage is not sufficient answer to the question that is now being insistently raised, viz., 'why is State-recognition and State-support denied to the Indian systems of medicine which are doing from eight to nine times the work that the European system is doing?' It may be gratefully and unhesitatingly accepted that immense has been the benefit that has accrued to India by the introduction of Western science in general of which Western medicine forms a part; but that is no answer to the complaint that State-neglect has been the chief cause of the decadence of indigenous systems of medicine. The promotion of learning in India has ever

depended on the due discharge of the duty of the State and the rich to observe their Dharma of supporting the cultivation of letters and sciences to the best of their ability. In a memorable minute recorded by the eminent orientalist Colebrooke, so long ago as 6th March 1811, that prophetic and acute thinker unerringly pointed out that the cultivation of sciences and letters in India would certainly perish if the State neglected its primary duty of supporting them to the best of its ability. The Calcutta University Commission Report rightly considers this minute as a document 'of abiding interest and special value.' The case for the State encouragement of indigenous literature and science cannot perhaps be better summed up than in the following words of this learned orientalist—words, which are as true and as worthy of respectful consideration to-day, as more than a century ago, when he wrote thus :—"It is a common remark that science and literature are in a progressive state of decay among the natives of India. From every inquiry which I have been enabled to make on this interesting subject, that remark appears to me but too well-founded. The number of the learned is not only diminished but the circle of learning even among those who still devote themselves to it appears to be considerably contracted. The abstract sciences are abandoned, polite literature neglected, and no branch of learning cultivated but what is connected with the peculiar religious doctrines of the people. The immediate consequence of this state of things is the disuse, and even actual loss, of many valuable books, and it is to be apprehended that unless Government interfere with a fostering hand, the revival of letters may shortly become hopeless from a want of books or of persons capable of explaining them. The principal cause of the present neglected state of literature in India is to be traced to the want of that encouragement which was formerly afforded to it by princes, chieftains and opulent individuals under the native Governments. Such encouragement must always operate as a strong incentive to study and literary examinations but especially in India, where the learned professions have little, if any, other support. The justness of these observations might be illustrated by a detailed consideration of the former and the present state of science and literature at the three principal seats of Hindu learning, namely, Benares, Tirhoot and Nadia. Such a review would bring before us the liberal patronage which was formerly bestowed, not only by princes and others in power and authority, but also by the zamindars or persons who had distinguished themselves by the successful cultivation of letters at those places. It would equally bring to our view the present neglected state of learning at those once celebrated places, and we should have to remark with regret that the cultivation of letters was now confined to the few surviving persons who had been patronised by the native princes and others under former Governments or to such of the immediate descendants of those persons as had imbibed a love of science from their parents. It is seriously to be lamented that a nation particularly distinguished for its love and successful cultivation of letters in other parts of the Empire should have failed to extend its fostering care to the literature of the Hindus and to aid in opening to the learned in Europe the repositories of that literature."

Declaration of policy.

24. We fully associate ourselves with this weighty appeal for State-encouragement of indigenous literature and science in general; and we also desire, in particular, to make a special appeal on behalf of the indigenous systems of medicine because they have the additional and overwhelmingly strong claim for our grateful recognition and support in that they minister to the medical needs of nearly nine-tenths of our vast population who are quite unprovided for by any official medical aid. In making this appeal we are not unmindful of the fact that the State is now going through a period of unprecedented financial distress and that, with the best of all possible intentions, they may not be able to show their interest in as generous a manner as the essential justice of the case would require it ; on the contrary it will be seen, we trust, that every one of our recommendations is based on the full realization of the fact that the State finance is now swinging between poverty and penury and that therefore it is our duty to make a clear distinction between what should be done as a matter of urgent and immediate necessity, and what may be done a little later on : and if we urge upon the Government to make an immediate declaration of policy in favour of State-recognition and State-aid, it is because we feel that the essential justice of the case demands it and that such a

declaration is not, in itself, a demand on the finances of the State while its indirect effects are highly potent and beneficial in more than one direction. A mere gesture on the part of the Government indicating a change of heart with regard to this question will, we are convinced, go a very very long way in soothing public feeling which now feels itself unjustifiably flouted and outraged. Let our Government but declare that the cause of the Indian systems is their own and then they need have no anxiety about financial or public support; for, it will then be found that, by that very declaration alone, they will have tapped the perennial springs of our private and public charity which, in this country, have all along shown a tendency to flow along lines favoured by the State, conformably to our ancient and immemorial tradition where the subjects ever loved to follow the lead of their king—*Yatha Raja Thata Prajah.* Then again there is the fact that such a declaration of policy will be widely and enthusiastically welcomed by those who are entrusted with the administration of our local bodies, Religious and Charitable Endowments and the like, who will then be quite free to allocate funds for the promotion of Indian medicine, without fear of legal or other objections being taken against such a procedure. We therefore wish to repeat and emphasize our considered opinion that an immediate declaration of policy to accord State-recognition and State-encouragement to the Indian systems of medicine is the first and the most important step that has now to be undertaken by our Government.

Summary and Conclusions.

25. We may now sum up what we have discussed so far and state thus:—

(1) From the standpoint of science, the Indian systems are logical and scientific.

(2) From the standpoint of Art, they are not self-sufficient at present in the surgical line; but in the medical line they are quite self-sufficient, efficient and economical.

(3) In the best interests of science as well as of suffering humanity, it is highly desirable that the followers of Indian medicine should study the scientific methods of the West and adopt into their system whatever is useful in Western medicine and vice versa.

(4) To practise the art of medicine without a study of the science on which the art is based is quackery, whether it is undertaken by the followers of Indian or European medicine, such quackery is always undesirable and sometimes dangerous or even disastrous.

(5) It is only through the promotion of the Indian systems of medicine that, under the present circumstances, the State can hope to achieve the ideal of bringing medical relief within easy reach of all people—especially in the rural areas.

(6) It is therefore incumbent upon the State to explore to the full the possibilities of the Indian systems of medicine with a view to make them wholly self-sufficient and fully efficient in both its medical and the surgical branches.

(7) The first and the most important step that is now to be undertaken by our Government is to make an immediate declaration of its policy to accord State-recognition and State-encouragement to the Indian systems of medicine, viz., the Ayurveda, the Siddha and the Unani.

CHAPTER II.—MEDICAL REGISTRATION.

This question specifically referred to this Committee.

26. The question of according State-recognition and State-encouragement to the Indian systems of medicine will at once raise the question of the medical registration of the practitioners of the Indian systems of medicine, as was well-recognized by Dr. Gilbert Slater who, in moving his resolution on this question at a session of our Legislative Council held on 3rd September 1921, expressed himself thus:—"This Council has by a large majority passed a resolution to the effect that encouragement should be given to Ayurvedic and Unani practitioners. Now, I think, Sir, that it is incumbent upon us to consider what form, that encouragement has to take. The fundamental idea behind the resolution which I am proposing is that the preliminary step must be taken to organize practitioners of Ayurvedic and Unani systems of medicine and thereby to enable them to take steps for their own

improvement in status and efficiency. Thus a sure basis will be laid on which it will be possible to proceed: and if the Government take steps to encourage these systems, then they will be in a position to deal with an organized body and not with a mere unorganized mob, if I may say so, of practitioners. I should like to point out that this procedure, namely, first of all registering those who are actually practising Ayurvedic and Unani systems of medicine and then providing for the election of a Council by such registered practitioners who shall frame the necessary rules for the admission of those with suitable qualifications, represents the historical arrangement whereby the medical profession in other countries has been raised to a very high status of dignity and efficiency."

We shall therefore take up this question of medical registration first, not only because it is so closely connected with the question of State-recognition but also because the resolution was withdrawn by Dr. Slater on the distinct assurance of the Government that the question would be referred to this committee for consideration; and this has since been done by the Government in their Memorandum No. 18426–1, P.H., dated 21st January 1922.

Present conditions.

27. The extent of medical relief that is now obtainable in our Presidency may be gathered from the following table, in which the second column shows the figures taken from the latest census returns while the third gives the figures compiled from the returns furnished to us by the various local authorities:—

	Number of practitioners according to	
	Census returns (all kinds of practitioners).	Local authorities (indigenous practitioners only).
Anantapur	108	83
Arcot, North	884	104
,, South	707	99
Bellary	273	28
Chittoor	255	91
Chingleput	874	82
Coimbatore	1,342	86
Cuddapah	321	92
Ganjām	2,305	61
Gōdāvari	627	167
Guntūr	790	282
Kanara, South	591	165
Kistna	832	116
Kurnool	318	69
Madura	1,133	183
Malabar	3,990	502
Nellore	794	51
Nilgiris, The	96	8
Ramnad	1,231	59
Salem	1,098	105
Tanjore	2,260	94
Tinnevelly	2,138	208
Trichinopoly	530	68
Vizagapatam	555	122
Agency	81	..
Madras Corporation	1,368	1,076
	25,523	3,995

Thus it will be seen that according to the recent census the total number of medical practitioners of all kinds (including veterinary surgeons) is 25,523 (of whom 21,380 are males and 4,143 are females). If from this figure we deduct the number of practitioners of Western systems and veterinary surgeons, the remainder may be taken to represent approximately the number of Ayurvedic and Unani practitioners in this Presidency. From the recent Medical Register, it is found that the number of registered medical practitioners (i.e., practitioners of the Western

system) in the Presidency is 2,272; the Chief Superintendent, Civil Veterinary Department, was requested to kindly furnish us the number (arranged district-war, if possible) of the veterinary surgeons in this Presidency; but the required figures were not available in his office; we believe, however, that on a most liberal computation the total number of veterinary practitioners (including those who practise in our villages without being trained in any of our veterinary colleges) may not exceed 1,000; let us roughly take the practitioners of Western system at 3,000, for, in addition to the 2,272 actually registered, there are some others who are not; this gives us a total deduction of about 4,000 from our census figures, viz., 25,523; thus, the total number of Ayurvedic and Unani practitioners according to our recent census returns will be 21,523, or making every allowance for all errors in the direction of excess, it cannot be less than 21,000. The discrepancy between this figure and that obtained from the returns of local authorities (i.e., 3,995) is (except in the case of the Corporation of Madras where there is a fair agreement between the two returns) too great to be easily explained away; apparently, the standard of our local authorities in judging our Ayurvedic and Unani practitioners is very high; otherwise, we would not have "nil returns" sent to us in large numbers; for, it is the general belief that there is hardly a village, especially in the south, which is without its own vydiars or hakims; these, however, do not apparently count in the judgment of our local authorities; but as we do want to know the total number of vydiars and hakims of all classes practising in every nook and corner of our Presidency, we have discarded the figures of the local authorities and taken only those of the recent census returns; that is to say, we reckon that, for a population of 42,318,985 inhabiting our Presidency, the total number of medical practitioners following the European system is not more than 3,000 as a maximum, and the number following the Indian systems is not less than 21,000 as a minimum; in other words, there are at least seven practitioners of the Indian systems to every one practitioner of the European system.

Medical registration according to ancient authorities—Indian and European.

28. The conception of the due regulation of the practice of medicine by the State is no recent innovation imposed by British Administration but is traceable not only in the writings of ancient Aryans but also in the written records of other archaic institutions as well. According to Sushruta, the intending practitioner, after obtaining proficiency both in the Science and Art of Medicine, had to secure a permit from the King before he could set up practice as a member of the medical profession, and Draconian legislation itself was mild as compared with that piece of drastic regulation which visited the practice of quackery with capital punishment. We learn from Diodorous that "among ancient Egyptians, the practice of medicine was subject to legal regulation."* There is evidence among the Justinian writings to show that the State regulated the practice of medicine, surgery and midwifery; "those desiring to practise must have been found competent by an examination; the number of physicians in each town was limited; they were divided into classes and were subject to the Government of the Archiatri."* "A law of King Roger of Sicily (1129–54) punished those who practised medicine without authority with imprisonment and confiscation of goods and an Edict of Frederick II (1215-46) imposed like penalties upon those who presumed to practise except after graduation at the School of Salernum."* During the reign of King Henry V of England, an Act of Parliament was adopted forbidding any one, under a penalty of both fine and imprisonment, from "using the mysterie of Fysyck unless he hath studied it in some university and is at least a Batchelor of Science."* By 3, Henry VIII chapter II, A.D. 1511, it was provided that "no person within London or seven miles of it, should exercise as a physician, except he be first examined, approved, and admitted by the Bishop of London, or the Dean of St. Paul's, calling to them four Doctors of Physic, and for Surgery, other expert persons in the faculty. No person beyond the said seven miles' precinct of London should exercise as a physician or surgeon in any diocese, unless first approved by the Bishop of the diocese or in his absence by the Vicar-General either of them calling to them such expert persons in the said faculties as their discretion should think convenient."* This Statute is

* Extracts from Chapter I of Medical Jurisprudence (second edition) by Witthaus and Beeker (William Wood & Co., New York).

still unrepealed, though obsolete. It would perhaps be more interesting than profitable to pursue this historical sketch any further, but it is submitted that enough has been said to show that the spirit breathing through these ancient regulations and the Modern Medical Registration Acts is alike the same, although the form in which the spirit is embodied necessarily varies with the time, place and other circumstances of its manifestation.

A change of outlook necessary because the outlook of medical practice has changed.

29. The ancient Hindu physician was enjoined by Charaka to religiously observe the rule of conduct contained in the following:—" Not for self, nor for the fulfilment of any earthly desire of gain, but solely for the good of suffering humanity, should you treat your patients and so excel all. Those who sell the treatment of diseases as merchandise gather the dust and neglect the gold "; such noble sentiments are also traceable in the written records of other archaic institutions such as those of Rome and Greece. The Common Law rule in England was that a physician could not sue and recover for his services, and the etiquette of his profession obliged him to receive what his patient chose to give him as an 'honorarium' and not as a fee. Whatever may have been the theories of ancient Hindu and Roman Civil laws and whatever may have been the practice of the court-physicians and sworn-surgeons who were maintained by the State and had no need to turn their attention to earning money for their livelihood, the ancient notion of gratuitous professional service has long been abandoned and " the increase in the number of professional practitioners and their exclusive devotion to a special class of service as a means of living has essentially modified the practical character of their employment. Although in legal conception a mandate, yet, from force of circumstances growing out of an altered state of society, the mandate is practically changed to a contract of hire (*Locotio operis*). This doubtless reduces professions to the status of artizanship and places them on a par with manual labour, conjoined to the special skill of a particular calling. But it also simplifies the character of the contract, removes it from the category of imperfect or innominate obligations, requiring the intervention of legal fictions to furnish a means for their enforcement, and brings it within the pale of concensual agreements based upon a sufficient consideration." * In fact, as with every other progressive institution there was, in the field of medicine also, a movement from " status to contract," to use the expressive pharseology of Sir Henry Maine. It is as well that this change from the ancient notion that the status of the physician carried, in itself, some rights (e.g., state-maintenance) correlated to certain duties (e.g., rendering gratuitous service to *all*—to the modern view that the character of the employment between physician and patient is wholly contractual) should be noticed and emphasised, as it has some definite bearing on the later-day medical legislation.

The raison d'etre of medical registration is public safety.

30. The right of the Legislature or the State to enact laws or regulations controlling the practice of medicine is broad-based on the solid rock of public safety and founded on that inherent and plenary 'police power' of the State to control all things hurtful to the comfort, safety and welfare of society. " A person engaging in the practice of medicine or surgery as a profession is holding himself out to the world and especially to his patients as one qualified by education and experience to possess more than ordinary skill and ability to deal with the great problems of health and life. He professes to the world that he is competent and qualified to enter into the closest and most confidential relations with the sick and the afflicted and that he is a fit and proper person to be permitted freely, and at all hours and all seasons, to enter the home, the family circle and the private chamber of persons suffering from disease or injury." † It requires very little argument to establish the proposition that it is the duty of the State to see that persons, to whose special care the most cherished treasures of the citizens, namely, their health, life and honour, are entrusted, do not abuse their sacred trust with impunity. If police regulations are necessary to protect the person and property of the citizen from the thief and the murderer, similar regulations are even more emphatically necessary to protect his health, life and honour from being damaged by pretentious quacks and dishonourable practitioners, who may carry on their evil ways in the name of an honourable profession.

* Ibid, pages 25 and 26, and Jurisprudence of Medicine by Ordronaux, pages 13 and 14.

† Medical Jurisprudence by Witthaus and Becker (second edition), page 7.

Much of the difficulty and the suspicion that surround this problem at the present day will, we think, disappear if we make it clear to all concerned that what medical registration seeks to prevent is quackery, dishonest practice or pretentious ignorance of any particular system professed, no matter whether it is Allopathic, Ayurvedic, Siddha, Homeopathic or Unani, and that it has no direct concern with the grading or judging of the relative merits of rival systems themselves.

The problem of rival systems.

31. The present state of our affairs in this matter has a good many resemblances to that which obtained in the United States of America in the early thirties and forties of the last century, and a study of the methods by which the problem of rival systems was solved in that country may help us to arrive at a satisfactory solution of the problem with which we are now confronted. Let us take the case of the New York State as an example. "At the time of the passage of the Act of 1813, and for many years afterwards, nearly all the physicians in New York State practised in accordance with the theories and precepts of what is now called the regular or Allopathic school of medicine. The law provided that the physicians in the respective counties in the State of New York should meet and organize county medical societies. As a consequence of the fact that the physicians of that day were chiefly of the Allopathic school, they necessarily obtained the control of all the county medical societies and State medical societies. Hence it became difficult, if not impossible, for physicians who wished to practise on other theories and tenets than those obtaining in that school to obtain licences to do so; with the growth of the Homeopathic and eclectic schools of Medicine came applications to the Legislature asking for those practising the methods of these schools the same rights and privileges of organizing county and State societies as had been extended to physicians generally by Act of 1813, so that in 1837, by Chapter 384, the Legislature of New York State enacted that Homeopathic physicians might meet in their respective counties and organize county medical societies, with Board of Censors having the same powers and privileges which were granted to the societies of the Regular School by the Act of 1813; and by other laws similar privileges were granted to the so-called 'Eclectic School.'" * Later-day legislation, while it has removed certain inharmonious and injurious effects of the older legislation, has only tended to consolidate the fundamental conception of "Equal recognition for all and favour for none." Conformably to this policy of *laissez faire*, Medical Education in the State is now controlled by the Regents of the University of New York, through Boards of Examiners, selected from among persons nominated by each of the three State medical societies, viz., the New York State Medical Society, the Homeopathic Medical Society, and the Eclectic Medical Society; and no person can lawfully practise medicine, unless licensed by the Regents and registered as required by law. There will, of course, be room for complaint if any one of our rival systems were accorded differential or preferential treatment; but there ought to be none if what is sought to be controlled is *not* the practice of any particular system, but pretentious ignorance or dishonest practice of the particular system professed; for it is not the purpose of the Legislature to decide on questions of orthodoxy or heterodoxy; as was stated in *State* v. *Biggs* (133 N.C, 723) "The courts have held that of the many schools of medicine and surgery, the Legislature could not prescribe that any one was orthodox and the others heterodox, but that those professing the different systems, Allopathic, Homeopathic, Thompsonian and the like, should be examined upon a course, such as is taught in the best colleges of that school of practice." The extension of medical registration to *all* existing systems and the clear recognition of the fundamental conception that *quackery is pretentious ignorance of the system professed and not the practice of any particular system itself*, are very necessary before the question of dealing with the problem of quackery can come within the region of practical legislation.

32. The several aspects of the thorny question of rival schools are so well and so fully discussed by Judge Daly in *Corsi* v. *Maretzak* (New York, Court of Common Pleas 4 E.D. Smith, 1–5) that we desire to quote here in extenso the following portions of his luminous judgment:—

"The system pursued by the practitioner is immaterial. The law has nothing to do with particular systems. Their relative merit may become the subject of

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* Ibid page 12.

enquiry, when the skill or ability of a practitioner in any given case is to be passed upon as a matter fact. But the law does not, and cannot, supply any positive rules for the interpretation of medical science. It is not one of those certain or exact sciences in which truths become established and fixed, but it is essentially progressive in its nature, enlarging with the growth of human experience, and subject to those changes and revolutions incident to any branch of human enquiry, the laws of which are not fully ascertained. The labours of the anatomist, the physiologist and the chemist have contributed an immense storehouse of facts; but the manner in which this knowledge is to be applied in the treatment and cure of diseases has been, and will probably continue to be, open to diversity of opinion. No one system of practice has been uniformly followed, but physicians from the days of Hippocrates have been divided into opposing sects and schools. The sects of the Dogmatists and the Empirics divided the ancient world for centuries, until the rise of the Methodics, who in their turn gave way to innumerable sects. Theories of practice, believed to be infallible in one age, have been utterly rejected in another. For thirteen centuries Europe yielded to the authority of Galen. He was implicitly followed, his practice strictly pursued. Everything that seemed to conflict with his precepts was rejected; and yet in the revolutions of medical opinion, the works of this undoubtedly great man were publicly burned by Paracelsus and his disciples; and for centuries following, the medical world was divided between the Galenists and the Chemists, until a complete ascendancy over both was obtained by the sect of the Vitalists. This state of things has been occasioned by the circumstance that medical practitioners have often been more given to the formulation of theories upon the nature of disease and the mode of its treatment, then to the careful observation and patient accumulation of facts, by which in other sciences the phenomena of nature have been unravelled. I am far from under-valuing the great benefits conferred upon mankind by the study of medicine, and have no wish to minister to any vulgar prejudice against a useful and learned profession; but it is not to be overlooked that as an art it has been characterized in a greater degree by fluctuations of opinions as to its principles and mode of practice than perhaps any other pursuit; that it has been distinguished by the constant promulgation and explosion of theories; that it has alternated between the advancement of new doctrines and revival of old ones, and that its professors in every age have been noted for the tenacity with which they have clung to opinions and the unanimity with which they have resisted the introduction of valuable discoveries. They still continue to disagree in respect to the treatment of diseases as old as the human race, and at the present day, when great advances have been made in all departments of knowledge, a radical and fundamental difference divides the Allopathist from the followers of Hahnemann, to say nothing of those who believe in the sovereign instrumentality of water.

In fact, nothing comparatively is known of the philosophy of disease. Its eradication or cure, where the result of human agency, is in the great majority of instances attributable rather to the careful observation, judgment, and experience of the particular practitioner, than to the application of general or established methods available to all. The popular axiom that 'doctors differ' is as true now as it ever was, and so long as it continues to be so, it is impossible for the law to recognize any class of practitioners, or the followers of any particular system or method of treatment, as exclusively entitled to be regarded as doctors. In adverting to the conflicting views and differences of opinion that exist and have ever existed in the practice of the healing art, it is not to call in question the value of learned, skilful and experienced physicians, but merely to show the error of attempting, in the present state of medical science, to recognize as a matter of law, any one system of practice, or declaring that the practitioner who follows a particular system is a doctor, and that one who pursues a different method is not."

Types of Control.

33. As types of control exercised by the State over the practice of medicine, the current Medical Acts of Great Britain and New York afford excellent illustrations. It may be said of American Legislation generally that its aim is to prohibit all unregistered practice, while extending the field of registration as wide as possible. The British Medical Act aimed at no such absolute prohibition; as is evident from

its preamble, its declared object was that " persons requiring medical aid should be enabled to distinguish a qualified from an unqualified practitioner " ; it merely set up a machinery for " Hall-marking " the qualified practitioner, but the public were left free to seek " medical aid ", if they chose, from unregistered practitioners. The declared object of the Madras Medical Registration Act is even narrower ; its object is merely " to provide for the registration of medical practitioners in the Presidency of Madras," not to distinguish qualified from unqualified practitioners and not certainly to prohibit unlicensed practice. Faced with the problem of setting up standards for " Hall-marking " practitioners of the indigenous systems, the Legislature purported to confine its attention to the practitioners of the Western system only and to none other ; for, medical registration and medical education are so closely interrelated that, without control over medical education of the indigenous systems, it was thought, and rightly too, that registration of practitioners of those systems was impracticable. But we are now proposing quite a different state of things ; and, as will be seen later on, we are making definite recommendations for the State control of the medical education of the indigenous systems ; and under conditions contemplated by us, the objection to medical registration on the ground that it could not be undertaken without the State also assuming control over medical education will have no validity. Moreover, if the State has to discharge properly one of its primary duties to the public, viz., the duty of protecting it from quackery and dishonourable practice, can it afford to confine its attention to the maintenance of a certain minimum standard of professional qualification and efficiency among the followers of Western medicine only and not concern itself about the professional efficiency of the followers of the Indian systems also, who are at least seven times as numerous, and among whom there are, to every one real expert, very many pretentious quacks whose qualifications may be little or nothing at all ? Is it not the bounden duty of the State to create an atmosphere favourable to the maintenance of at least a minimal standard of professional efficiency among the practitioners of our Indian systems ? Is there any reason to suppose that the danger to the public from the quack of the Indian systems is any the less than that of the European systems ? On the contrary, considering their relative numbers, the danger is many times greater. If blatant quackery that is now rampant everywhere is to be efficiently controlled, it can only be done by bringing under some sort of legislative control the practitioners of *all* systems of medicine and not registered allopaths only. Whatever may be the results of academical discussions over the comparative merits of the two systems, eastern and western, we must clearly recognize the fact that they have both come to stay. Partisans of Eastern and Western systems may prove to their own satisfaction the superiority of their respective systems ; but the duty of the State in this matter of registration is not so much with this academical discussion as with the obvious duty of protecting all citizens from dishonourable practitioners of all systems practised in this country. We believe that while differences may well exist about the time and other circumstances suitable for the introduction of medical registration of the practitioners of the Indian systems there will perhaps be none about the fundamental principle underlying medical registration itself, viz., that it is the primary duty of the State to keep proper control over all things hurtful to the comfort, safety and welfare of society at large and to protect it from the dangers associated with retentious quackery of every description.

Certain objections examined.

34. From a perusal of the discussion over Dr. Slater's resolution already referred to, it is clear that notwithstanding the general agreement that undoubtedly exists about the *principle* of medical registration, there are differences regarding details. The main objections may be briefly summarized thus :—It is too premature to consider the question just at present ; it should only be taken up for consideration after the minimum and higher standards of professional qualifications are decided upon ; furthermore it would be necessary for a network of medical schools and colleges of the Indian systems to have been first established all over the country and for a steady stream of qualified practitioners to have gone out from these institutions for some years, before we could think of extending medical registration to our indigenous systems ; and this, it is argued, was the plan adopted in

England. Then, again, there are some people who state that there is still a good deal of suspicion surrounding medical registration and that, for reasons which are partly historical, people fear that if they get themselves registered it is tantamount to allowing the powers that be to cast ropes round their necks with which they can strangle them at any time. The result would be that real experts, the inclusion of whose names would honour any register, will not care to come in, while those that do come in are not worthy of being taken on the register; in either case, it is argued, the result would be really undesirable and even disastrous, more especially at a time when as many as 90 per cent of our population have no medical relief at all other than that offered by the practitioners of the Indian systems.

35. We may take this last objection first because it is easily answered; in fact, Dr. Slater himself answered it in the Council debate when, in reply to objections of this nature, he stated thus :—"I should like to say, however, that the members who have spoken in opposition to this resolution have completely misunderstood the first clause. My intention is that all practitioners of indigenous systems shall be invited to come on to the register. If this had been understood, I do not think any one would have imagined that any injury could come to the practitioners and the systems they represent. On the other hand, some such registration and organization is the only way by which Ayurvedic and Unani medicine can acquire efficiency and retain reputation." Whatever be the exact time—whether it be to-day or five years hence—that we decide upon extending medical registration to the practitioners of Indian Medicine, we have to automatically admit into our register all those vaidyans and hakims practising at the time of our first registration who choose to apply for registration; it is, of course, true that this would mean that a number of downright quacks would get entry into our first register; that is a risk which is inevitable and has to be faced at any time; and the sooner we do it the better. Exactly the same risk was taken when the Medical Act providing for medical registration was first enacted in England; after all, it is a rapidly diminishing risk, if, side by side, we embark upon a settled policy of promoting the improvement of existing centres of medical education as also the establishment of new ones from which a steady stream of qualified and efficient practitioners would be going out into the world at as rapid a rate as our circumstances would permit. Further, if we are settled on introducing a system of medical registration at some time or other in the near future, then it seems to us that our risk is least if we take it now and at once; for, if we wait for some years more in the hope that during that period the ranks of our indigenous practitioners may become strengthened by the addition of a number of really qualified practitioners trained in our renovated or newly established centres of medical education, then we may be sure that for every one really qualified practitioner that we gain in this way, we will have to reckon on at least ten, or even more unqualified men setting themselves up as vaidyans or hakims in the hope that some day, when medical registration of indigenous practitioners is really taken on hand, they may find themselves officially recognized to be as good registered practitioners as those who hold real qualifications. If, however, we decide on introducing medical registration at once, we would, by that very act, close the door once for all against any unqualified practitioner coming hereafter into our register of qualified practitioners. There need not be the least fear, however, that, if medical registration is introduced immediately, the extent of medical relief now available would in any way be diminished; for, every one that is actually practising at the time of first registration would be invited to apply to be registered when he would be automatically taken on the register as a matter of course.

36. Moreover, there is at present no question at all of absolute prohibition of unlicensed practice such as that which obtains in America. Neither the British Medical Act nor any of the Indian Acts, which are all modelled on the British Acts, aim at such absolute prohibition. Doubtless they do secure certain rights and privileges to the registered practitioners, but these are associated with certain duties and responsibilities, the non-observance of which may entail dis-registration or certain other penalties laid down by law. It is only when the practitioners want to enjoy the benefits of the rights and privileges which registration secures for them that they need register themselves; otherwise, they are quite free to continue their practice exactly as they were doing before. Hence it should be clear that the

introduction of medical registration at any time would not result in even a single practitioner actually practising at that time being kept out of the register if he chooses to come into it and much less in his being prevented from carrying on his practice exactly as he was doing it before.

37. Then, again, there remains the objection that medical registration should not be introduced until we have a network of medical schools and colleges which are equal to the task of sending forth every year a sufficient number of efficient practitioners, holding qualifications indicating that they have reached certain recognized standards of professional skill and learning. We may state at the very outset that the promotion, as rapidly as possible, of medical schools and colleges such as those contemplated above is the very pivot of all our recommendations. When once we have clearly recognized that it is the height of folly to continue to ignore or talk of ending the Indian systems of medicine, then wisdom would lie in mending the known defects of these systems as quickly as it is humanly possible to do; and the most urgent mending that cannot wait even a moment's delay is that which relates to the machinery of the medical education of these systems. If it is assured that there is no question of delaying over this reform, then it seems to us that nothing is gained by delaying the introduction of medical registration; on the contrary, we will be decidedly out to lose so far as the question of admitting a minimum number of pretentious practitioners into our first register is concerned. Looked at from this standpoint, the institution of immediate registration has certain points to recommend itself on the supreme ground of public safety; for it will at once prevent unqualified practitioners from getting themselves automatically registered hereafter, with the result that the proportion of qualified to unqualified practitioners borne on our registers will go on diminishing from the very outset, while, if we wait for some years more, we must be prepared to admit into our registers a large contingent of persons with unknown qualifications, who are certain to set themselves up as vaidyans and hakims during the period that elapses between now and the time that registration is actually introduced and to whom registration cannot be denied at the time of our first registration; for, we have no means of judging among them which is the real expert and which the pretentious one, as there cannot be any question of applying to them the usual examination or other tests; there may be some real experts among them of great learning and skill, and we dare not give insult or do injustice to them by suggesting any formal examination or other tests of proficiency; rather than do an injustice to one real expert, we have to take the risk of admitting into the register ten pretentious ones; but, this is a rapidly diminishing risk which England herself took when she first enacted her Laws of Medical Registration. Hence, judged from the standpoint of safeguarding the interests of the public and the safety of the individual (and these should ever be the objects of our paramount concern), it does seem to us that, as between immediate and delayed registration, the former is attended with less risks than the latter so far as the question of automatic admission into our first register of persons with unknown qualifications of professional efficiency is concerned. But, we wish to re-emphasize and make it clear that we are suggesting immediate registration only if it is decided to undertake at once the reform of medical education so as to ensure a steady stream of qualified practitioners being sent out in sufficient numbers from those centres of medical education whose revival and establishment we have recommended in a later chapter. If this is not undertaken, then we are clear that the introduction of medical registration has to wait.

38. We are aware that a few practitioners of the indigenous systems are altogether against the institution of State-control and medical registration, whether introduced now or after some years, while a few others are of opinion that, as both in England and India, similar legislation in respect of European medical practice was introduced many years after the establishment of suitable centres of medical education, we may likewise wait for some years before we think of introducing medical registration in respect of the practitioners of the Indian systems. Apart from the consideration that events in the world are now happening much faster than before and that in an age of motor cars we cannot afford to go on at the pace of the ox-cart, there is the fact that it is not in the best interests of the public or the indigenous practitioners themselves that the State should continue to be indifferent towards the professional qualifications and the efficiency of the practitioners of those

systems which minister to the medical needs of nearly 90 per cent of our public, while lavishing all its care, favours and patronage on a system which reaches but a small 10 per cent of our population. That, till very recently, the thoughtful followers of the Indian systems themselves held similar views to ours and resented very strongly the differential and derogatory treatment accorded to them by the various Provincial Medical Registration Acts will become clear to any one who goes through the resolutions on its subject passed at several Ayurvedic and Unani conferences held before 1919. In our own Presidency we find that when the Madras Medical Registration Bill was first introduced in 1914, the Hon'ble Shifa-ul-Mulk T. Zian-ul-la-bideen Sahib Bahadur bitterly complained as follows in his dissenting minute to the Select Committee's Report on the draft Medical Registration Bill of the late Dr. Nayar :—" I regret to say that the Bill even as amended by the Select Committee retains something of its original characteristic of doing injustice to the Ayurvedic and Unani systems of medicine by ignoring their existence altogether." Then again we find that Ayurvedic and Unani practitioners from all over India have actually submitted memorials to Government on more than one occasion praying that the anomaly and differential treatment, resulting from the various provincial Medical Registration Acts should be removed and suggesting various modifications to the existing Acts with a view to include competent indigenous practitioners in the several provincial medical registers. Unfortunately, the Government of the day did not listen to these representations; now, when the Government is actually prepared to do its very best, it seems as though its offers have, as in many an other case, come rather too late, when people have not only ceased to make any representations to the Government on this subject but are really apt to look with suspicion on every move of the Government even though it is only to offer them what they prayed for only yesterday, and has no other motive behind it except the best interests of the public and the indigenous practitioners themselves. That this is a change of only yesterday may be gathered from the following extract taken from a memorial submitted to the Government of India over the signature of Janab Hakim Ajmal Khan Bahadur (President of the All-India Ayurvedic and Unani Tibbi Conference, Delhi) so recently as March 1919 :—" How hakims and vaids are affected by the various Medical Acts passed between 1912 and 1917 is a matter which needs some explanation. Previous to the establishment of Medical Councils in various provinces, according to the provisions of the Medical Acts, no preferential distinction existed between practitioners of the Western and the indigenous systems of medicine. The privilege of eligibility for the Indian Medical Service was certainly the monopoly of men of western qualifications as far as Government was concerned. No special protection, however, was extended to other practitioners of the Western system which was not also claimed by hakims and vaids of recognized standing. Rivals between themselves, they stood equal in the eyes of the law, while the practitioners of the Ayurvedic and Unani system have not yet ceased to claim 90 per cent adherents among the population of the country, as was admitted by the late Sir Pardey Lukis in the Imperial Legislative Council, 1916. The status of hakims and vaids was recognized in courts of law and in all responsible circles. Their professional opinion was not discounted in official circles, and on the whole they enjoyed the privileges appertaining to men of recognized qualification and standing. No invidious line of demarcation existed between hakims, vaids and the doctors. But ever since the passing of the Medical Acts even distinguished hakims and vaids, though not directly 'tabooed' in the Acts, have been reduced to the position of unrecognized, unqualified laymen, whose professional opinion is at a discount in courts of law and in the eyes of the Government. This result has been secured in a very subtle manner. First of all the Medical Acts provide for the establishment of Medical Councils, from which hakims and vaids are precluded. The Medical Councils appoint Registrars and provide for the registration of medical men, and no provision is made for hakims and vaids here either. And finally none but those duly registered in this manner are recognized by Government as 'duly qualified medical practitioners.' The Acts explicitly lay down that 'no certificate required by any Act from any medical officer shall be valid unless the person signing the same shall have been registered under the Medical Acts' and again 'no person shall hold any appointment as a physician, surgeon, or other medical officer in any dispensary, hospital, infirmary or lying-in hospital . . . as a

health officer . . . unless he be registered under the Medical Acts.' Now there is absolutely nothing *per se* exceptionable in these provisions, if hakims and vaids of recognized standing were not debarred from being registered. But the bare fact of their being ineligible for registration according to the Medical Acts is enough to injure the very prestige of their systems. In their operation the Acts have come to be interpreted in such a manner as to prevent even sympathetic practitioners of the Western system from being in any way associated with any Ayurvedic and Unani institution. A registered medical practitioner was actually removed from the Bombay Medical Council's register for being associated with an Ayurvedic College, his connexion with the institution being characterized and interpreted as 'professionally infamous conduct.' It may be urged that such Ayurvedic and Unani teaching and examining bodies as exist in the country or of unequal, and, therefore, unreliable standard. To urge that is to make out a case for the standardization of such institutions. The Government may recognize no institution, which does not satisfy the standard approved by them. They should further provide for the affiliation of these institutions to Universities established by Government Charter, and prescribe a specified course of medical instruction according to Ayurvedic and Unani systems, and thus ensure the due qualification of vaids and hakims. Finally, recognizing the fact that the vast majority of people till resort to hakims and vaids, provision should be made for the improvement of the standard of the Ayurvedic and Unani Medical aid, available at present, by establishing State-aided Ayurvedic and Unani hospitals and dispensaries. In the interests of the people who are beyond the access of the allopathic institutions and must necessarily remain so, and also in response to our national demand, it is the imperative duty of the Government to concede the points urged by us."

A separate Council of medical registration and education.

39. At the time when such representations were made, indigenous practitioners were willing to get into a common register along with the practitioners of the European system and to entrust their interests to the care of a council, presided over by the head of the "Allopathic" Medical Department and consisting of a majority of members following the European system of medicine. But things are now very much changed. There was hardly a single witness that we examined who did not demand that if Medical Registration is to be applied at all to the followers of the Indian systems, then, they must have a General Medical Council of their own, quite distinct from, and independent of, the one presided over by the head of the 'Allopathic' Medical Department, who should have nothing to do with their council. While we do not consider it necessary or profitable to go here into the details of any future legislation on Medical Registration as applied to practitioners of Indian Medicine, we nevertheless consider it desirable to indicate here one or two main points which should be borne in mind when any such legislation is undertaken in the near future. First and foremost among them we wish to mention the almost universal desire that has just been referred to above, viz., to keep the General Council of Medical Registration and Education for the Indian Systems of medicine quite distinct from, and independent of, the existing Medical Council for practitioners of European medicine. A time there was one when General Medical Council for practitioners of all systems was well within the region of practical politics, but unfortunately that time has slipped away, although we earnestly hope and trust that, at no distant date, unbrotherly differences and rivalries between followers of different 'systems' would disappear and all would meet in fraternal concord and amity as becomes the members of an honourable brotherhood engaged in the one common labour of serving sick and suffering humanity. But unhappily that time is yet to come and meanwhile we have to recognize and make provision for the stern realities of the present situation. We are therefore clear that the Council of Medical Registration to be constituted for practitioners of Indian systems should, for the present, be quite distinct from, and independent of, the existing Madras Medical Council, and that it should be constituted specially as a council for *directly supervising both medical registration and medical education*, more on the model of the General Medical Council of Great Britain than on that of Madras or the other Provinces of India where the control over medical education is remote and indirect.

Professional association.

40. The next point we wish to emphasise is that steps should at once be taken to promote free professional intercourse between the qualified practitioners of both the Indian and the European systems. The existing rule which makes it penal for a registered allopathic practitioner to associate professionally with qualified practitioners of the Indian systems must go; it really requires very little argument to demonstrate the utter inconsistency and the irritating anomaly of the existing rule whereby the Government allows even those reputed practitioners of the Indian systems to whose professional efficiency it has itself testified by conferring such distinctions as Vaidya Ratna, Shifa-ul-mulk and the like, to be treated as medical untouchables with whom no registered allopathic practitioner can professionally come into touch without losing his caste. Moreover, as we have pointed out in our discussion of the value of the Science and Art of Indian medicine, the best interests of science as well as of suffering humanity require that the practitioners of both Indian and European systems should freely exchange thoughts and learn from each other, so that they may be able to bring to bear on the problems of health and ill-health the best available knowledge that it is possible to have. It would be a great disservice to the cause of both science and humanity to place any impediment in the way of free professional association between the practitioners of either system. Furthermore, the rule seems to be really a dead letter, especially in Bengal, where serious hardship to the public would have resulted and there would have been a tremendous uproar against its continued existence, had it not been for the fact that the rule is more honoured in the breach than in the observance of it—a fact which has been indicated in the written evidence of Dr. Gananatha Sen of Calcutta.

41. Then again, there is the fact that professional association with real experts of Indian systems cannot but be for the good of our allopathic practitioners, if even a doctor of the high eminence of the late Surgeon-General Sir Pardey Lukis (Director-General, I.M.S.) felt that such an association was so beneficial to him as to make him openly declare thus :—

"Personally if I were ill, I say frankly that I would prefer to be treated by a good vaid or hakim rather than by a bad doctor. I resent strongly that spirit of medical trade-unionism which leads many modern doctors to stigmatise all vaids and hakims as quacks and charlatans, and I shall always be proud of the fact that I was privileged to have the friendship of two such learned men as the late Nawab Shafa-ud-dowlah of Fyzabad and Kaviraj Bijay Ratan Sen of Calcutta." It is sometimes objected however that such an association may be repugnant to the spirit of the British legislation on medical registration and that in the case of persons holding British registrable qualifications certain difficulties are likely to arise. We do not know if this is a fact, but, even if it is, it could not be allowed to override the supreme and paramount interests of the public at large; the fact of the matter seems to be that when medical registration was first enacted in India, the rule regarding 'Association with unqualified persons' was slavishly copied from the British Regulations, and when it was found later that its strict enforcement would create hardship to the public, it was allowed to remain a dead letter in certain provinces, while in the case of the Punjab and the United Provinces where enactments were undertaken after the discovery of the mistake it has been definitely provided that such an association would not amount to 'infamous conduct in a professional respect'; but, even here, the gradually gathering volume of public opinion against the rule, as it exists even to-day in Madras, Bombay and Bengal, is faithfully reflected in the fact that while, in the Punjab, where the Registration Act was passed in 1916, freedom of association with indigenous practitioners was allowed only grudgingly and in a halting and halff hearted manner, and that too, not by any provision in the Act itself but by an explanation to a section in the warning notice addressed to all registered practitioners, the same was done in the United Provinces, where registration was undertaken in 1917, by a specific provision made in the Act itself [vide section 26 (2)]. We would strongly recommend that a change similar to that of the United Provinces be effected in our Madras Medical Registration Act also. We would likewise recommend that a similar provision in favour of association with practitioners of the European system be inserted in any future enactment that may be undertaken for the registration of the practitioners of the Indian systems.

Other details to be settled by a special committee of experts.

42. As regards other details such as the constitution of the General Medical Council, its powers and duties, its relation to centres of medical education and medical relief, the procedure to be followed in regard to inquiries and appeals, and such other matters, we are of opinion that they should all be settled with reference to the actual conditions that do obtain at the time when the introduction of such legislation is contemplated. We however wish to add that whenever such legislation is taken on hand, the draft should be framed in consultation with a committee of experts containing representatives of all the three systems of Indian medicine that are practised in this Presidency, viz., the Ayurveda, the Siddha and the Unani.

Medical registration contingent on due provision of adequate medical education.

43. We may now sum up our discussion of this topic and state once again that our recommendation for immediate introduction of medical registration is contingent on the preparedness of the Government to embark at once upon a settled policy of promoting by State-recognition, State-aid, and such other means, the establishment of sufficient centres of medical education and that, if they are not able to do so, the consideration of this question may well be deferred for the present. We believe, however, that if they undertake the first of these two alternatives, the risk of unqualified practitioners coming in large numbers into our first register is much less than when legislation in this direction is undertaken at a later period. Moreover, registration of indigenous practitioners will have to be introduced, sooner or later, not only to safeguard the interests and safety of the public but also in the best interests of the practitioners themselves ; hence it seems to us that if the Government can undertake to embark at once upon the educational policy that we have referred to above, then the sooner we introduce medical registration, the better will it be for both the public and the profession. The financial aspect of registration itself need not in the least disturb their decision ; for, with as many as 21,000 practitioners, a considerable number of whom may well be expected to apply for registration if it is so designed as to promote their best interests, we may reasonably expect our income from registration fee alone to be somewhere between one to three lakhs —an amount quite enough not only to cover the expenses of registration itself but also to meet some portion of the cost of subsidising approved centres of medical relief and medical education of our Indian systems of medicine. It will now be our next business to consider the standards of professional efficiency and other details to which these centres should conform if State-recognition or State-aid is to be accorded to them.

Summary and conclusions.

44. (1) For a population of 42,318,985 inhabiting the Madras Presidency, the total number of medical practitioners following the European system is not more than 3,000, while the number following the Indian systems is not less than 21,000, that is to say, there are at least seven practitioners of the Indian systems to every one practitioner of the European system.

(2) The principle underlying medical registration is not foreign to Indian tradition.

(3) Medical registration is necessary in the best interests of both the public and the practitioner.

(4) The purpose of medical registration is only to discourage the pretentious ignorance and dishonest practice of any particular system whatever it may be.

(5) Absolute prohibition of unregistered practice as obtaining in many states of the United States of America is not suitable for our present conditions ; what may now be attempted is only to secure certain rights and privileges to the Registered as in the United Kingdom.

(6) The establishment of an adequate number of medical schools and colleges from which a sufficient number of efficient practitioners may be expected to be sent out every year is the first step that ought to be undertaken before medical registration is introduced in respect of the practitioners of Indian medicine.

(7) The General Council of Medical Registration for practitioners of the Indian systems must be quite distinct from, and independent of, the existing Madras Medical Council. It should be empowered to directly supervise both medical registration and medical education.

(8) The first register of indigenous practitioners shall include the names of all practitioners who apply for registration within a specified period from the passing of the Registration Act.

(9) The Madras Medical Registration Act IV of 1914 should be amended on the lines of section 26 (2) of the U.P. Medical Registration Act III of 1917 so as to provide for free professional association between practitioners of the Indian and the European systems of medicine; a similar provision should also be introduced in any legislation that may be undertaken to make provision for the registration of practitioners of Indian systems.

(10) The details of such legislation be settled with reference to conditions that actually obtain at the time when medical registration for practitioners of Indian medicine is definitely decided upon. It is also desirable that the draft of the contemplated legislation is drawn up in consultation with a committee of experts containing representatives of all the three Indian systems practised in this Presidency, viz., the Ayurveda, the Siddha and the Unani.

CHAPTER III.—MEDICAL RELIEF AND MEDICAL EDUCATION.

An autonomous department of Indian medicine.

45. It is sometimes suggested that all that is required to encourage the Indian systems of medicine is to investigate the drugs that are being used by them and take into the British pharmacopœia those things that are found useful in practice. This is most emphatically *not* the way to encourage the Indian systems of medicine, though doubtless it would be of some use in enriching the pharmacopœia of Western medical science. As the Secretary to the Government of Mysore observes truly in his Memorandum on the reorganization of the Government Ayurvedic College, Mysore (vide G.O. No. 519-20 Muz. 522–18–2 of 13th August 1919): "The method adopted in Madras of deputing a Western-trained medical man to go about collecting information about drugs and specifics used by the indigenous practitioners with a view to subject them to analysis and tests independently of their place in the treatment of diseases may, no doubt, help Western Medicine to acquire a knowledge of a few Eastern drugs, but it can hardly be called a comparative study of the different system." It seems to us that suggestions of this sort are based on two fundamental misconceptions; the one is that the only thing worth reviving in Indian systems of medicine is a few of its drugs; the second is that the investigation can be properly carried on by a Western-trained doctor not acquainted with the Science on which the Art is based. That both of those views are radically wrong has been shown both in Appendix I and Chapter I of our Report. "There seems to be a strange idea in some quarters," says Dr. Gananatha Sen in his written evidence, "that the success of the Ayurvedic physician depends on the high efficacy of individual indigenous drugs. This idea, the mainspring of action, the so-called 'Researches in indigenous drugs,' of which we hear so much in these days, is simply erroneous. The success of the Ayurvedic physician is due not to the 'charm' of this or that drug but to his clear grasp of the Doshic derangement and his selected and well-considered treatment of that derangement according to well-defined principles of Therapeutics." If this point is clearly recognized, then it seems to us that there can be no question of encouraging the investigation of indigenous drugs only, without investigating at the same time the science on which the use of these drugs is based: for, according to our findings, Indian Medicine is most emphatically not a matter of a few drugs used empirically, but a highly systematized and strictly rational science, from which Western Medicine has a good deal to learn if it will. Hence we have not the least hesitation in rejecting the suggestion that all that is required for encouraging the Indian systems of medicine is merely to depute a few Western-trained doctors to investigate the indigenous drugs and add to the British pharmacopœia those drugs that they may find useful in practice. We are also of

opinion that even from the standpoint of enriching Western Medicine it is best that such investigations are undertaken by Western-trained pharmacologists, who are also well versed in the science of Indian Medicine ; otherwise, it would be a rather wasteful procedure and unfair to the investigator himself, as he would be required to investigate into the value of drugs regarding the actions and uses of which a vast storehouse of catalogued and systematized knowledge remains locked up in the science of Indian medicine, but the key to which the investigator has never been asked to equip himself with.

46. We cannot also agree with the suggestion that has been made to us that all that is required to encourage the indigenous systems is to found a chair of Indian Medicine in our University and colleges of Western Medicine. That may perhaps be useful to followers of Western Medicine to become acquainted with whatever is valuable in Indian Medicine ; and on that ground we have ourselves made a recommendation of this nature which will be referred to in the later sections of this chapter. But, from the standpoint of promoting the progress of Indian medicine in all its branches, this would be as inadequate and unsatisfactory as is the establishment of Samskrit punditship or Arabic munshihood in our Arts Colleges, for the promotion of Samskrit or Arabic learning. We do not think it is necessary to labour this point any further ; for, we are all fully aware how much (or more correctly, how little) of a success has been the institution of Munshis and Pundits on the staff of our Arts colleges in making for the advancement of Oriental learning. We have also seen that, notwithstanding the continued existence of munshis, pundits and even professors of Oriental languages, it has been found necessary to promote independent centres of Oriental learning and to organize in our University a separate Faculty for the promotion of Indian Classical and Dravidian studies ; the need for establishing a separate department of Indian Medicine is, in some respects, even greater ; for, it is unreasonable to throw on the shoulders of the present heads of Allopathic institutions whose primary concern is to foster the progress of Western Medicine, the additional and rather incompatible duty of fostering the progress of systems of medicine which they are apt to look down upon as unscientific and antiquated superstitions not worthy of their scientific study and whose achievements they are apt to resent as the unmerited successes of rivals practising 'quackery.' Hence we consider that, under existing conditions, the *sine qua non* for the ordered progress of our indigenous systems is the establishment of a department of Indian Medicine, quite independent of, and distinct from, the existing department of Western Medicine. But, as our ultimate object is to see that the followers of both Indian and Western Medicine will, as far as possible, bring to bear on the problems of health and ill-health, the best available knowledge that it is possible to have, it is our earnest hope and desire that both these departments will learn to appreciate and benefit from each other's excellences, and to work in a spirit of mutual helpfulness and co-operation so that, united, they may march forward in their humanitarian campaign of fighting sickness and suffering far more successfully than when working in rivalry or isolation. Moreover, under the peculiar circumstances of decay, especially on the surgical side, which Indian Medicine is now in, the supreme need of the hour is the willing and enthusiastic co-operation of a large number of Indian doctors trained on Western lines who would learn enough of Indian Medicine to become intelligent and sympathetic co-workers with all others who are engaged in the task of rapidly making the Indian systems of medicine wholly self-sufficient and fully efficient. It is no doubt true that if the Indian systems are to flower into their full perfection, the impulse to dare and to achieve must come from the devoted followers of those systems themselves ; but, under the peculiar conditions of Indian Medicine which we have depicted elsewhere, our Western-trained doctors—especially those who are in charge of the several hospitals and dispensaries throughout the Presidency—have a unique opportunity of rendering signal service, if they will, to the cause of Indian Medicine. Later on, their services may become superfluous ; but, at present, theirs is the privilege and the opportunity ; and we want them to lend their helping hand, if they will, to their brethren of Indian Medicine. At present, they are entrusted with the direction of all our State and State-aided centres of medical education and medical relief ; and occasions may arise when it may be necessary to utilize the resources of these institutions to subserve the interests of Indian Medicine as well ; and we earnestly pray that, if and

when such occasions arise, the Western-trained doctors will actively co-operate in helping the followers of Indian systems to rapidly regain the ground that they have now lost. Moreover, for reasons which we have explained elsewhere, we believe it to be in the best interests of both the Science of Medicine and the public at large, that the practitioners of each system should appreciate and learn the excellences of the other; and for the early realization of such a wholesome result, it is necessary that the followers of either system should learn to ring out the existing feelings of mutual dislike and unhealthy isolation, and ring in the spirit of genuine friendliness and fraternal co-operation. It is in the power of the present Directors and Superintendents of the various hospitals, medical schools and other institutions, either to retard or hasten the regeneration of the Indian systems of Medicine. We most fervently hope and trust that they will choose the only course which persons with the liberal education and traditions associated with the noble profession of medicine may confidently be expected to take.

A General Council of Indian Medicine.

47. We are, therefore, of opinion that while it is very necessary at present that there should be a separate department of Indian Medicine quite distinct from the present medical organization, it is, at the same time, very desirable that the members of both organizations should work in close collaboration and in a spirit of fraternal amity, mutual helpfulness and willing co-operation as becomes the members of a fraternity whose aims, ideals and reason for existence are all identical. To secure this object, we propose that the Department of Indian Medicine should be placed under the same Minister as the one who controls the existing Department of Official Medicine; we also propose that an Advisory Committee be constituted to be called "The General Committee of Indian Medicine" which shall advise on all matters of general policy pertaining to the new department; its President shall be the Minister (ex officio) concerned, while the heads of both the existing and the new Medical departments shall be ex officio members, the latter acting also as the Secretary to the Committee; the other members of this Committee not exceeding six in number shall be representatives of the Indian systems of medicine, to be nominated by the Government in the first instance for a period of three years; thereafter, they may be returned by a system of election, if, by then, Medical Registration is extended to the practitioners of Indian systems or they constitute themselves into a sufficiently organized body in any other way.

The Commissioner of Indian Medicine.

48. As for the head of the new Department of Indian Medicine, we propose that he shall be called "The Commissioner of Indian Medicine." In the beginning, the nature and extent of his duties will necessarily be varied and extensive; he will have to work out the actual details and organize an entirely new department. In the first instance he should, in our opinion, concern himself with the organization of the following departmental committees to advise him in his various duties :—

(1) *Medical Administration Committee.*—This is to deal with such questions as the following :—Recognition of private schools, hospitals and other similar institutions; making recommendations to the Government regarding the allocation of Government grants and subsidies; and generally, to act as an advisory body in regard to appointments, recruitments and all other administrative matters in general. The members of this Committee need not all be professional experts; on the contrary, we believe that the inclusion of a certain number of non-professional non-officials will be of very real value in enabling the Committee to view all questions from as broad a standpoint as possible.

(2) *Library and Text-Book Committee.*—This is to deal with the collecting, editing, translating, where necessary or desirable, of valuable manuscripts and printed works; to prepare or recommend suitable text-books, as also of books, journals and other publications calculated to help the student to keep himself in touch with, and acquire an up-to-date knowledge of, the latest advancements in medicine. This Committee will naturally consist of experts—both officials and non-officials. All the professors and physicians whose appointments we have recommended in a later section in connexion with our Central College of Indian Medicine will have to work in this Committee, that being part of their regular duties.

(3) *Medical Education Committee.*—This is to deal with the details of medical education such as the provision of medical schools, medical school hospitals, laboratories, museums, botanical gardens and the like; fixing the minima and higher standards of professional efficiency, and framing schemes and curricula of studies suitable to these standards; providing for the testing and hall-marking, by means of examinations or otherwise, of candidates trained at the various centres of medical education, as also of others who may apply to be so tested; providing for post-graduate study, specialization and research; and the elaboration of such other matters as are referred to them by the General Committee of Indian Medicine. As regards the constitution of this Committee, while the bulk of its members will naturally be experts in medicine (Indian or European), we believe that it will be a great help to the Committee if it includes not only professional experts but also those who are experts in the field of Education in general.

The first step—Organization of Medical education.

49. It seems to us that the first and the foremost problem that we have to address ourselves to is to see how we can make the Indian systems of medicine rapidly self-sufficient and efficient; for, unless and until this is secured, the problem of bringing adequate medical relief within the easy reach of our masses, especially in the rural areas, will not become satisfactorily solved; moreover, the establishment of institutions of Indian systems will, under these circumstances, remain a proposition of only limited applicability, because it would involve the maintenance of a double set of institutions, one, viz., the Indian, to look after our medical ailments, and the other, viz., European, to minister to our surgical needs—an arrangement as uneconomical as it is unsatisfactory; some such arrangement may, however, become inevitable in the transitional stage; but this period should be as short as possible. We, therefore, consider that the most urgent and immediate concern for the State is to establish and promote by State aid, State recognition and such other means, the establishment of suitable centres of medical education, and the devising of a suitable scheme of studies of Indian Medicine calculated to make those trained under it equal to the task of ministering not only to our medical needs as at present, but to our surgical ailments as well. We are aware that it is sometimes argued that as the amount of major surgical work that is now done in many of our dispensaries is so small, it would better serve the interests of the public to replace at once some of our existing dispensaries by institutions of Indian systems; for, we would then be able, it is argued, to run at least twice as many institutions as we now have, without budgeting for any additional expenditure at all; we are, however, of opinion that it is not advisable to embark upon this tempting programme without making ourselves reasonably certain that the indigenous practitioners to be engaged therein are given such surgical training as is calculated to make them equal to the task of dealing efficiently with at least the minor surgical ailments of our ordinary out-patient practice. In our opinion we require, under our present conditions, two types of medical practitioners, with two standards of proficiency, a higher and a lower, the principal aim in the training of the latter being the rapid multiplication of fairly efficient practitioners willing and content to serve in rural areas, more or less as the component parts of our village organizations, while the chief aim in the training of the latter is to provide for high-grade general as well as consultant practice, specialization, teaching and research. It is this idea of providing for the training of two grades of practitioners that we have throughout kept before our minds in making the recommendations detailed in the succeeding portions of this chapter.

Methods of teaching.

50. Broadly speaking, there are two methods, in which Indian Medicine is taught at the present day; in the one, the teaching is confined to certain standard text-books while practical training is given by experienced professors; this is modelled after the ancient "Tol" system which is still prevalent in Bengal; in the other method, the system of teaching is according to a prescribed syllabus and not confined to any text-book in particular, the practical and clinical instruction being given in hospitals, dispensaries, laboratories, etc., set apart for the purpose; this method which is followed in modern medical institutions of the West is the one

recommended by the All-India Ayurveda Vidyapeetha. Each method has its own advantages; but at a time when, due to various causes, there has been an arrest in the progress of Indian Medicine, the confining of teaching to ancient text-books alone may tend to crystallization unless the professors keep themselves in active and intimate touch with all that is happening around them, so that they may be able to include in their teaching the newer conception of things, either by way of commentaries, explanations or in any other manner that may appeal to them.

The medium of instruction.

51. At present, instruction in Ayurveda and Unani is mostly carried on bi-lingually, while in the Siddha system it is mostly done through Tamil; the Ayurvedists generally make use of Samskrit text-books, while the explanations are usually given in the vernacular of the locality; in the higher grades of study, even the explanations are given in Samskrit, while in some institutions this practice is followed even in the lower grades. In the study of Unani Medicine, Arabic and Urdu seem to take the place that Samskrit and vernaculars do in Ayurvedic study. The general concensus of opinion among all the witnesses that we consulted seemed to be that, in the lower grades, the medium of instruction should be the vernacular; in the higher grades, however, some are of opinion that the classics in which the ancient texts are written should be the medium of instruction, while the majority seem to favour the idea of demanding from the students a fairly high proficiency in the classical literature concerned, the question of using the classics or the vernacular as the medium of instruction being left to the convenience of the professors and the students of any particular institution or linguistic area concerned. We are in general agreement with this latter view, as also with the idea of having the vernacular as the medium of instruction in all lower grades—a view which is now so universally accepted that we do not consider it necessary to labour the point any further.

The value of English to students of Indian Medicine.

52. There are two distinct questions that arise in respect of the value of English to the students of Indian Medicine—firstly, its value as a medium of instruction for subjects of Western Science, and secondly, its value as a medium for the acquisition and diffusion of whatever is valuable in European and American thought generally.

53. *Its value as a medium of instruction.*—If, as we have indicated in the introductory chapter, the future students of Indian Medicine that we have in view are to be conversant not only with the subjects of their own special system but with the fundamentals of what is valuable to them in Western Medicine also, including a study in the essentials of the Western scientific methods, then the question arises as to whether this teaching is to be imparted through English or through vernaculars. The first alternative would necessitate the possession of at least a working knowledge of English on the part of candidates, while the second would require suitable vernacular translations of English scientific works. It is true that at present there are very few suitable translations, but if once the professors of the transitional period (who should, of course, be conversant with both English and the vernacular) begin to teach in the vernaculars, then it will not be long, we think, before the want is satisfied; for the very notes of the professors' own class-lectures would form the basis for suitable text-books in the vernaculars. The experiment has been eminently successful in the Usmania University of Hyderabad where some of us have heard lectures on Physics delivered in excellent Urdu, and easily followed by the students of the college classes. Similar experiments have been tried in various other parts of India, such as Bengal, Maharasthra, United Provinces, Delhi, the Punjab and so on, and the results are uniformally encouraging. It is no doubt true that, in the transitional period, there is some difficulty in that the professors will have to think in English and then translate the thoughts into vernaculars; but, the hardship is only temporary; for, when once the experiment is started, its success is assured; and the very urgent need itself is certain to call forth the necessary capacity, and soon the professors and the students alike will begin to be able not only to speak freely but also think in the vernacular itself; and this is an immense advance over the present-day

conditions where there is an enormous waste of brain-power involved in acquiring knowledge through a foreign tongue. We are, therefore, of opinion that vernacular is the ideal medium of instruction not only for learning the subjects special to the Indian systems of medicine, but for the acquisition of a general knowledge of whatever is best in Western Medicine also.

54. *Value of English as the medium for intellectual participation in Western knowledge and culture.*—If our future students of Indian Medicine are to keep themselves in touch with the progress of medical thought all over the world in general and over Europe and America in particular, then it will be necessary for them to be familiar with at least one European language whether English, French, German, or any other; and, in our view, a knowledge of English is, on the whole, more valuable to us than any other foreign tongue, enabling us as it does to exchange ideas with practically the whole of our known world. In alluding to the value of English to the Bengali medical student, the Calcutta University Commissioners state: "If it is true that an English medical man regards it as a serious handicap to be unable to read French or German, it would be infinitely more serious handicap for a Bengali practitioner to be unable to read English" (Volume V, page 116). This statement would, we think, apply with equal force to medical practitioners all over India.

55. The whole question of the respective role of English and the vernaculars in any scheme of study for Indians is well summarized in the following note of Mr. Ramananda Chatterjee, the talented Editor of *the Modern Review*, quoted in the Report of the Calcutta University Commission, Volume II, page 256:—"My idea is that our students should learn English for culture, for purposes of inter-provincial and international commerce and communication, for administrative purposes, for the political unification of India and inter-provincial exchange of ideas for keeping touch in all respects with the outer world, and for the acquisition of the latest modern knowledge. But, for the perfect assimilation of knowledge in childhood and youth, for the thorough and rapid diffusion of knowledge among all ranks and classes of the population, for removing the recent but growing intellectual and cultural gulf between our men and women and between the classes and the masses, and for stimulating originality in thought and its expression and in scientific and artistic achievement in the largest possible number of persons, the use of the vernaculars in all grades of University Education is indispensably necessary. All objections have force only temporarily; for the most highly developed modern languages and literatures were at first no better than Bengali. In their case development was obtained by use; and it will be obtained in our case, too, in the same way." What applies to the Bengali student applies equally well, we think, to the students of Madras. While, therefore, we are emphatically for using the vernaculars as the medium of instruction, we are nevertheless of opinion that a working knowledge of English is desirable for all students of Indian Medicine, more especially for those preparing for the higher standard of proficiency.

Preliminary general qualifications.

56. In some schemes of study based on our ancient "Tol" system, the practice still obtains according to which the students of medicine are trained in both professional and general education side by side; that is to say, the scheme of studies (which may extend over four or five years) makes provision for the teaching, year after year, of not only professional subjects but also of subjects of general education and culture, like the study of Sahitya (Poetry, Prose, Drama, Rhetoric, etc.), Grammar, Visheshika and Samkhya Darshanas (which deal with the fundamental physical, chemical and biological conceptions on which their medicine is based), Tarka and Nyaya (which deal with logic and scientific methodology), and such other allied subjects. The practice, however, that seems to be better suited to modern conditions and is now actually adopted in many of the modern educational centres of Indian Medicine is more or less like that adopted in our Western schools of medicine, viz., to require that the students should show evidence, as a condition of their admission to any particular course of study, that they have received at least the minimal standard of general education prescribed for that course; the underlying idea is, of course, obvious; it is that, without such a preliminary general equipment, the students will not be able to follow intelligently,

and receive adequate benefit from the course of professional studies provided for them. For instance, the minimal general qualification for students desiring to study for the M.B. & L.M.S. degrees of our University is that they should have been successful in the Intermediate examination (Science group preferably) of our University or any other examination considered equivalent thereto; similarly, the minimal standard required of students desiring to study for our L.M.P. course is the S.S.L.C., the Matriculation examination of our University or anything considered as equivalent thereto. We do not, of course, wish to lay down definitely (for that should be done only by a body of experts) what should be the actual minimal standards of preliminary education that should be required of students desiring to take up the study of Indian Medicine; but it seems to us that, in view of the fact that the modern students of Indian Medicine cannot afford to keep themselves isolated from the trend of scientific and medical thought all over the world, it may be desirable to require of them a course of preliminary general education along the lines followed by those preparing for the Certificate of Proficiency of the Faculty of Oriental Learning of our University. As regards the value of a working knowledge of English to the students of Indian Medicine, we have already dealt with that topic in a previous section and expressed our view as to its need and use for students preparing for both the higher and the lower of the two standards of Indian Medicine that have been suggested therein; we merely wish to add here that the value of English for even those students who are preparing purely for Proficiency in Oriental Learning alone, has so fully been recognized by our experts of Oriental Learning that the Regulations of our University relating to this matter definitely lay down that 'The question papers in the examination for certificates shall be set and answered in English' (Chapter XXIX—Regulation 17). We venture to think that it should not be difficult for experts to suggest along the lines indicated above, a scheme of general study that would be suitable to students who may wish to take up the study of Indian Medicine later on.

57. At a time when some people are still arguing over the relative value to the student of Medicine, of a preliminary study of 'The Humanities' and 'the Sciences' (as though these studies were in eternal conflict, or the study of one meant the exclusion of the other), the following weighty pronouncement of the Calcutta University Commissioners is well worthy of pondering over:—'Not a few of the medical profession are of opinion that it is to the advantage of a medical man (whose art requires a knowledge of human nature as well as of experimental and of medical science) to receive a sound training in the Humanities before he enters on his professional studies. We think that a free choice in the selection of subjects of secondary education (consistently with any general rules adopted by the relevant authority) should be left to the individual student who desires to become a doctor. We are convinced that it would be a grave mistake to adopt any policy which would debar students who have followed a literary rather than a scientific curriculum in the intermediate colleges from pursuing a medical career. Nor indeed, in view of the precedents of Western education, do we regard such a policy as conceivable' (pages 103–4, Vol. V).

58. So far as the students of Indian Medicine are concerned, there is no danger in the immediate present of their paying too much regard for 'Sciences' or of neglecting the study of 'Humanities'; on the contrary, it is probable that a number of them would be all the better for some knowledge of Western science and its methods. But, if we are to discuss intelligently any scheme of studies that may be brought up for our consideration, we cannot afford to neglect the consideration of the important question of the value of Humanities to the student of Science in general and of Medicine in particular. In the West, thoughtful people have begun to complain that over-specialization in a particular science alone, is leading to terrible narrow-mindedness and an utter lack of perspective and of sense of proportion. In any case, there can be no manner of doubt that the student of Medicine cannot afford to dispense with the humanising influences and the broad outlook which are fostered by the study of 'Humanities' and which are so very necessary as a corrective against the deadening influences and the narrow outlook of over-specialization, such as are now being caricatured in the writings of some of the acute thinkers and writers of the West.

Schemes of professional study.

59. From a perusal of the several schemes of study some of which we have published in Appendix VIII adopted by the various centres of Medical Education all over India, it is clear to us that there is a general desire on the part of the professors of the Indian systems to give their students the benefit of a general acquaintance with modern scientific methods and with whatever is valuable in Western medical thought. As the Calcutta University Commissioners have truly observed, 'There is an obvious and promising desire at the present moment among the numerous adherents of these systems for closer touch with modern scientific methods' (Vol. V, page 106). The curricula of studies of a good many institutions of Indian Medicine make definite mention of a study of such subjects as Modern Physics, Chemistry, Biology, Anatomy, Surgery, Bacteriology, Medical Jurisprudence and even the History of Medicine; but, in the great majority of cases they have not been able to make adequate provision for the proper training in these subjects largely because they suffer chronically from lack of funds. It is no doubt true that those additional courses of study are not likely to be of any great benefit to the students of Indian Medicine unless it is taken up by better types of students than those who are generally resorting to it at the present day. 'The number of Ayurvedic physicians in India is legion,' says Kaviraj Dr. Gananatha Sen in his Benares Lecture on Ayurveda, 'but soundly educated exponents of the ancient system are not numerous . . . Our old methods of study might have been of a high order but we must not be timorous to admit that the present methods by which so-called Kavirajas are manufactured of idle pupils or compounders in many cases, are fit to be mercilessly condemned'. If therefore we really desire to attract an adequate number of the best brains of the nation to the pursuit of Indian Medical studies, we must immediately declare our policy of treating the real experts of Indian Medicine at least on a par with those of Western Medicine; if we really desire that the future of the Indian systems should be worthy of their past, we must immediately take steps to break that vicious circle wherein lack of State-recognition and State-aid has led to the present condition of their decay, which, in its turn, is made the excuse for continuing to withhold State-recognition and State-aid.

60. In Appendix VIII we give several schemes of study that have been advocated by responsible authorities all over the country. Below we indicate only the general principles which should underlie any scheme of studies of Indian Medicine that would be introduced into our Presidency; for, we believe that it is not possible for us to think out all the details of a perfect scheme which would be meticulously faultless in every detail and would not require to be modified from time to time in the light of actual experience. We therefore content ourselves by indicating only the broad outlines, while the several details have, in our opinion, to be settled by a committee of experts actually engaged in the work of teaching, and as such, fully conversant with the exact needs of the situation as it may present itself at any particular time.

As we have pointed out above, the leaders of Indian systems themselves have fully recognized that it is necessary and profitable for them to incorporate into their systems whatever is valuable in Western Medicine; it is, of course, understood that the necessary or valuable portions of Western Medicine will be so taught to their students as to make these teachings fit, as naturally as possible, into the scheme of studies appropriate to Indian Medicine itself and not be forced down, as though they were things quite apart from, and alien to the basic principles of Indian Medicine itself; for instance, if we are to teach the modern electron theory of matter to the students of Ayurveda, it can well be grafted on to the Visheshika and Samkhya doctrines of the genesis of atoms; so too, a number of modern physiological conceptions—especially along the lines of Endocrinology and Modern Psychology—can well be seen to fit in with corresponding notions of Indian thought, like the thri-dosha and other theories; to those who have eyes to see, similar parities of thought will be seen to exist in every other department of Medicine also, such as Pathology, Medicine, Surgery and the like. What one would like to see is that the scientific imagination and intuition of the students of Indian Medicine is stimulated and drawn out along lines of Indian Medicine itself so as to give it a distinctly Indian colouring, and not make it merely a dead or second-rate imitation of Western

Medicine. Our aim should be to strive our very best to make every system of medicine strike out its own distinctive note so that we may listen, not to a lifeless monotone, but to the rich concord of a variety of harmonious notes.

Difficulties regarding teachers, text-books, etc., not insuperable.

61. This means, of course, that we must get professors who are acquainted with both systems of medicine, and what is even more important, who have the genius to graft the essentials of whatever is worth knowing in Western Medicine on to the basic principles to be found in Indian Medicine. Theoretical perfectionists will at once ask, 'Where are the teachers and where are the text-books ? How can we have medical education along lines of Indian Medicine before we can have either ?' Our answer is, 'Begin to teach, and you will soon get both teachers and text-books.' Already there are a few admirable models of such text-books in the field, as for instance, the Pratyaksha Shareeram (Anatomy) and Siddhanta Nidanam (Pathology), both written by Dr. Kaviraj Gananath Sen. Opinions may well differ about certain controversial points and criticisms discussed in these excellent text-books, but there can be no manner of doubt that they serve as splendid models for others to follow and if possible, to excel. In Appendix IX, we give a large number of works of Indian Medicine that are still known to be extant (either as manuscripts or as printed works) ; it should be the duty as also the pleasure of the members of the Library and Text-book Committee suggested in a previous section, to go through all available literature on each subject and bring out, in due course, a series of suitable text-books such as those we have in view. As for competent teachers, there is no doubt that there will be some real difficulty during the first few years ; we shall likewise have a variety of other difficulties too—both foreseen and unforeseen, during the period of our transition ; but, that must only egg us on to greater endeavour, conformably to the old adage 'Difficulty adds to result, as the ramming of the powder sends the bullet further' ; surely, it cannot be beyond the wit of man to take adequate steps to survive such inevitable ordeals. Not that we are inclined to minimise our difficulties, but, we do think there is not the least need for despair. Friction and troubles may perhaps be inevitable but not insoluble ; they can and must be met as they arise, and it does no good to unduly distress ourselves over all possible difficulties known and unknown ; nor, is it always possible to think out beforehand all difficulties that may arise in the future and make due provision for them ; as practical workers, we cannot afford to spend ourselves in pondering over all conceivable difficulties and 'by fearing to attempt, lose the good we oft might win.' Many and many a time in history have problems which have remained insoluble to our doubting Hamlets and academical perfectionists become readily solved when taken up by our practical enthusiasts who meant business and were determined to dare and to achieve. Such are exactly the persons that are required for our present purpose—persons who can become fired with a noble ideal and moved to high endeavour by an uplifting idea. The supreme need of the hour is not so much a matter of money as of men—men who couple enthusiasm for ideals with the capacity required for translating them into practical achievement.

Subjects of study.

62. We are therefore clearly of opinion that the difficulties about teachers, text-books and the like, need not and should not stand in our way of reviving the indigenous systems of medicine. How far the teachers of the transitional period will be able to succeed in their task, depends, of course, on the capacity and genius for teaching, possessed by the individual teacher ; we have expressed in the previous section our views regarding the way in which these subjects should be taught, as also the general qualifications and professional equipment necessary for one who is to be a successful teacher along the lines we have indicated therein ; subject to these conditions, we are of opinion that every scheme of studies of Indian Medicine—whether Ayurvedic, Siddha or Unani—should make adequate provision for the teaching—theoretical, practical and clinical—of not only their own Physical and Biological Sciences, Pathology, Medicine, Surgery, etc., but also of whatever portion of European medicine is valuable or necessary to make the future students of Indian Medicine wholly self-sufficient and fully efficient—such subjects, for example, as Surgery in all its branches, essentials of Anatomy, Physiology and

Pathology (including Bacteriology), Medical Jurisprudence, History of Medicine and so on. There is nothing mystic or mysterious about any of these subjects which any intelligent practitioner of any system cannot master, if he is given adequate facilities to do so. While on this subject, we wish to give as wide publicity as we could to the fact that this additional training which the leaders of Indian Medicine are themselves keen on giving to all their students is in respect of not only Western Surgery, Midwifery, etc., but also of Medical Jurisprudence and of every other subject, the study of which is necessary or desirable for practitioners of every school of medicine generally, Indian as well as European. Our excuse for making specific mention of this fact is that some good people seem to have needlessly distressed themselves over the calamitous situation that may arise in respect of certain questions of Medical Jurisprudence, if the Western-trained practitioner is not there to help our judges with their expert evidence. The anxiety with which this question is viewed in some quarters, may be judged from the warning conveyed, apparently in all seriousness, through the following closing statement of an address reported to have been delivered by one of our eminent judges at a recent meeting of the Western trained doctors of our city :—'I have little doubt that the form of imposture which label themselves respectively as Ayurvedic and Unani medicine will, for long, survive the ordeal of their exponents of having to give evidence before judicial tribunals in cases where serious industrial forces are pitted against one another and where superstition will have to yield to accredited knowledge.' We have no desire to join issue with the distinguished judge in his obviously uninformed opinion regarding the worth of Ayurvedic and Unani Medical Science. One cannot, however, help expressing one's feeling of extreme regret and surprise that even those whose daily routine it is to try to hear both sides of every question before passing their judgment on it, should apparently consider it right and proper to condemn unheard the poor Indian systems which had really done nothing to provoke or merit the censure which the judge has chosen to pass on them without giving any reason whatsoever for doing so. If people will not stoop to learn, will they at least cease to destroy ? However that may be, we wish to definitely assure all persons of the way of our judge's thinking that in no scheme of Medical education of Indian Medicine which the Indian experts would endorse, is there any the least fear that adequate provision would not be made for the teaching of Medical Jurisprudence, including Rules and Regulations of Medical Ethics—a subject in which there seems to be a remarkably close correspondence between the early Indian and European systems of Medicine.

63. The only other recommendation which we wish to make in this connexion is that, from the beginning, due provision should be made for the proper teaching of the subject of History of Medicine. The great value of this subject does not seem to have been yet recognized by our Western experts, as fully or as widely, as its importance most assuredly deserves ; and we notice that even in the most recent Regulations of the General Medical Council (which have come into operation since January 1923), there is no attempt made to cure the defect in respect of the teaching of this subject, which is still left quite unprovided for in our existing schemes of studies of Western Medicine. But that is no reason why we should decline to benefit by the following eminently useful recommendation made by the Calcutta University Commissioners in respect of the teaching of Western Medicine but which applies with equal force to the study of medicine generally, both Indian and European :—'It is only in the light of modern medicine that ancient systems of medicine can be judged in their true perspective and relationships. The subject is one of importance not only for medicine but for the history of science and civilization generally. In a number of European universities, notably the University of Paris, there is a chair of the History of Medicine ; and there is a growing sense of the necessity, in these days of specialization, of establishing teaching which shall give to the specialist a wider view of his subject. Sir William Osler, the Regius Professor of Medicine in the University of Oxford, has drawn attention to this aspect of the matter in his interesting preface to the recently published studies in the History and Method of Science, edited by Dr. Charles Singer, which deals largely with the history of medicine. We hope that private generosity may furnish at an early date the funds for the establishment of such a chair as we suggest' (Vol. V, pages 107–108).

How promising recruits can be attracted to Indian Medicine.

64. With a view to attract an adequate number of promising youths to the service of Indian Medicine, we propose the adoption of such measures as the following :—

(1) *Deputing young graduates of Western Medicine to study Indian Medicine and vice-versa.*—Our greatest desideratum in the immediate present is a sufficiently large number of teachers who will so train their students that they will be wholly self-sufficient and fully efficient in every way and not defective along the surgical line as at present. To secure this end, we require the help of a number of Western-trained doctors who are willing to equip themselves to this truly ennobling task ; when once we succeed in efficiently training five or six batches of students, they may then be trusted to carry on the tradition and even improve upon it according to their own genius ; in the meantime, it is the unique privilege and the glorious opportunity for the Western-trained doctors, if they have the imagination to see it, to re-start the followers of Indian Medicine along the lines of their own forgotten surgical art ; it is not every Western-trained doctor that is fitted to this task of regeneration which demands the highest qualities of both head and heart ; it is not enough for him to be an expert in his own line ; that, of course, is necessary but it is but a part of his equipment ; he must, in addition, have a profound faith in the immense possibilities of Indian Medicine, and a clear grasp of its essential teachings, so as to enable him to present to his students whatever is worth knowing in modern Western medicine, as so many natural corollaries of their own fundamental propositions and not as alien innovations, destructive of their own essential truths and hypotheses. He must also have learnt enough of Indian Medicine to get himself rid of all notions of any fundamental superiority or supercilious patronage and be filled with a genuine desire to learn as well as to teach and to move among practitioners of Indian Medicine as brother among brothers and equal among equals. More than all, he must enter on his duties with a faith whose sincerity no ridicule can shake, a zeal whose edge no obstacle can dull, and an enthusiasm whose warmth no disappointment can cool. Now there are two ways how we may try to recruit into our service the sort of teachers that we have in view ; the one is to select young and promising graduates of Western Medicine, with a good knowledge of Sanskrit, Tamil or Arabic, and depute them for a period of three years to learn Indian Medicine, on condition that, on the completion of their course, they will devote themselves for service at our colleges and schools of Indian Medicine. It may be difficult at first to get candidates with all the qualities of head and heart that we have indicated above ; but, we must be content to choose the best that are available ; and while we may see to it that, as far as possible, we select only such as are actuated more by the spirit of service and dedication to an ideal than by mere monetary considerations, still we must not expect too much from poor human nature but make the thing attractive enough for some, at least, of our best and promising intellectuals ; with this end, we propose that the selected graduates should first be recruited as permanent members of our State Medical Organization, on the pay and prospects of the officers of the Provincial Medical Service and then deputed to study at the expense of the State. We propose that six such candidates be deputed every year for a period of five years ; and the cost, on this account, to be provided for in the first year will be Rs. 18,000, at the rate of Rs. 250 per mensem for each candidate. Another way of securing the same object is to depute young and promising graduates of Indian Medicine to qualify themselves in Western Medicine, provided they have the necessary general qualifications prescribed for such study. If they are S.S.L.Cs., Matriculates, or hold qualifications equivalent thereto, they can only proceed to the study of the L.M.P. course which extends over a period of four years ; if they are Intermediates or hold a qualification equivalent thereto, they may qualify themselves for a degree. In either case, they will have to be recruited into State service and then deputed for study, on condition that, on their obtaining the required qualification, they will devote themselves to the service of Indian Medicine. The amount to be budgeted for in the first year on account of six candidates of this group will be from Rs. 7,200 to Rs. 18,000, according as they are proceeding to the study of the L.M.P. course (when they will get Rs. 100 a month) or for a Degree in Medicine (when they will get Rs. 250 a month).

On the whole, the cost in the first year on account of twelve candidates—six deputed to study Indian Medicine and six, the Western Medicine—is not likely to exceed Rs. 36,000.

(2) *Other inducements.*—The measures discussed above are aimed at securing the proper kind of teachers; we also consider it necessary that we must provide some special attractions to at least a first few batches of the taught, if we really wish to attract an adequate number of young and promising intellectuals into the service of Indian Medicine. Our proposal is that at least twelve students be offered scholarships of Rs. 25 a month for the higher grade, and twelve of Rs. 15 a month for the lower grade, and that further, the certainty of an honourable livelihood be assured to the students that pass out successful from our schools and colleges of Indian Medicine, by guaranteeing employment or in any other way. There is nothing novel or radical in this proposal; this is exactly what was done for our civil sub-assistant surgeons till last year and what is still being done in the case of our military sub-assistant surgeons and assistant surgeons. There are various ways in which adequate inducements may be offered to our young and promising intellectuals. Thus, we may guarantee posts, at least in the beginning, to all our stipendiaries; we may throw open some prize posts for the first two or three students from among those that qualify every year; so too, we may declare that, other things being equal, the students from our schools and colleges have preferential claims for posts under Government and Local bodies than students trained elsewhere; it is quite unnecessary to enter here into any further details; for, they can be easily decided upon, when the actual programme is definitely taken on hand.

As regards the cost of this scheme of scholarships it would not exceed, in the first year, a sum of Rs. 6,000, of which Rs. 3,600 would be required for six senior scholars and Rs. 2,160 for six junior ones.

Colleges, Schools, Hospitals, etc.

65. With regard to medical education, our proposal is to establish a Central College of Indian Medicine at Madras and divisional schools at suitable centres in each linguistic area; the cost of the establishment and maintenance of the college and the associated hospital, herbaria, etc., is to be met wholly from State funds, while, in the case of the schools and the institutions associated with them, it is best that they form the primary concern of the local bodies and private agencies, which should however be actively encouraged and assisted by the State, by a liberal system of grants-in-aid, loans and such other measures.

66. On the side of medical relief also, we propose that the Government should actively help the local bodies and private agencies to establish and maintain hospitals and dispensaries of the indigenous systems of medicine. At present, the greater part of the cost incurred by our rural hospitals and dispensaries is met by the funds of the municipal and local bodies, the proportion of Government contribution being comparatively small. Hence if these local bodies are given free option to employ practitioners of Indian systems without the risk of losing Government contributions and other associated benefits, then it may not be necessary for the Government to budget for more than Rs. 50 on the average as the additional annual contribution for each rural institution where local bodies make due provision for medical relief on the lines of Indian Medicine; if, further, local bodies are allowed a free hand in laying down for themselves, if they choose, the policy which the Cochin Darbar seems to have been following, viz., that, in view, among other considerations, of the prohibitive cost of allopathic institutions, the limit of such institutions may be considered to have been reached, and that all future extensions of medical relief shall be along lines of Indian Medicine only, then, it seems to us that with a modest provision of a lakh of rupees in the next year's budget towards the cost of Government contributions to these rural institutions, we may find ourselves to have discovered at last the only possible way, under our present conditions, of solving the problem of bringing medical relief within the easy reach of our masses—a problem that has till now remained admittedly unsolved, according to both official and non-official authorities. From what has been stated above it will be seen that the central idea of our proposals is to *supplement and not supplant* the existing centres of medical relief and medical education. In the beginning, there will doubtless be some

difficulty on account of the paucity of competent practitioners of the Indian systems who can be trusted to carry out efficiently the responsible work that we have in view; but if we once start the thing going, the very demand acts as an incentive and stimulus for the increased production of the type of practitioners that are in demand. We believe, however, that our immediate needs may be met by recruiting candidates from among those who have graduated from such institutions as the Madras Ayurvedic College, the Venkataramana Ayurvedic College and Khuddusia College in our own city, and many other similar centres all over India as also from the diplomates of the All-India Ayurveda Vidya Peetha and such other examining Boards of Indian Medicine. There is also another important, if somewhat uncertain, field of recruitment; and this is from among those who have studied medicine under some form of our ancient 'Tol' system, and made their mark as successful practitioners; though the merits of the individuals of this class is in many cases difficult of even approximate ascertainment, yet it is among them that we find some of the m st authoritative exponents of Indian Medicine—persons who command the confidence of Princes, Rajas, judges and other high officials and of men of light and learning in all walks of life. Hence it seems to us that, even in the immediate present, the field of recruitment for competent physicians to be employed in our rural hospitals and dispensaries is not as narrow and limited as it may appear at first sight. In our opinion, the scale of pay for this class of practitioners should at least be that of our sub-assistant surgeons, viz., 75—10—175, with a selection grade of Rs. 200 per month for 10 per cent of the cadre.

A Central College of Indian Medicine.

67. We propose that a Central College of Indian Medicine be started at Madras, with Ayurvedic, Siddha, and Unani branches, and preparing candidates for both the higher and lower standards of professional efficiency of which we have spoken already. Provision should, of course, be made for associated hospitals, dispensaries, etc., for the clinical training of our students. We do not wish to go here into the details of the initial and recurring expenditure which the institution of the college and its associated hospital, dispensary, herbarium, etc., would involve; but, we reckon, that on this account, a provision of three lakhs will have to be budgeted for, for the first year; this will include the expenditure on account of furnitur , appliances, dieting, clothing, bedding, drugs, etc., but not the cost of erecting any new buildings; for we have proceeded on the assumption that if the Government are not able to give any of their own buildings for this purpose, then the college, hospital, etc., will have to be housed in suitable rented buildings. If, however, the Government are unable to provide for even this modest provision of three lakhs, then, we suggest that the existing centres of medical education and medical relief should be made to serve the interests of the Indian systems of medicine as well; in other words, the existing centres of medical education and associated centres of medical relief should henceforth be looked upon as common centres for the promotion of both Indian and Western Medical sciences. We will have to make the existing arrangements for hospital, laboratories, dissection-halls, museums, etc., go as far as they possibly could in this direction, and to provide anew for only such things as cannot be otherwise provided for. But, the active and sympathetic co-operation of the present heads of the institutions of Western Medicine is necessary for the satisfactory working of any such joint organization; and if such co-operation is not forthcoming, then there is bound to be a good deal of friction when two autonomous departments have the same common resources from which each has to satisfy its own needs. This joint method of work would probably be less difficult to carry out, in the State-aided institutions maintained by local bodies than in the State institutions maintained wholly by the Government themselves. In any case, it is an arrangement which is liable to lead to friction at every step; and that is our chief reason for saying that the best course is to provide for independent institutions of Indian Medicine; and it is only in the contingency of the Government being unable to take such a step that we suggest the alternative of making the existing institutions of medical education and medical relief available for the promotion of both Indian and Western Medicine.

68. In our opinion, it is necessary, for the first few years at least, that the staff of our College of Indian Medicine should contain some experts of Western Medicine who have learnt enough of Indian Medicine to have staunch faith in their immense possibilities and are fired with the zeal to help the followers of Indian Medicine

to recover, as rapidly as possible, the ground that they have now lost—especially in the field of surgery in all its branches. For this purpose, we require at least six experts on the pay and prospects of the members of the Provincial Medical Service; we have already provided in one of our previous recommendations that select graduates of Western Medicine be recruited in the Department of Indian Medicine, on the pay and prospects of the officers of the existing Provincial Medical Service and then deputed to take a course of training in Indian Medicine for a period of three years. It is our hope that from among the candidates so deputed, we will, in the near future, be able to find persons specially fitted for the sort of work expected of the graduates in Western Medicine whose employment we have recommended above. In the immediate present, however, we may have probably to be satisfied with candidates who are not already fully equipped for their work but will have to equip themselves hereafter as best and as quickly as they can. Then again we will have, after about five years from the starting of our scheme, another hopeful field of recruitment for this work, among those graduates of Indian Medicine whose deputation for qualifying themselves in Western Medicine, we have already suggested in one of our previous recommendations. As regards the expenditure on account of the professors recommended above, we think that, in the first year, it would amount to about Rs. 22,000 at Rs. 300 a month for each professor, who will have to undertake not only teaching work (both theoretical and practical) in the college but will also have to be in medical charge of associated departments in the hospital attached to the college, and responsible for the proper clinical training of the students committed to his care.

69. Next, we calculate that we require a staff of at least twelve experts of Indian Medicine for carrying on the teaching of the several subjects appropriate to each school of Indian Medicine, and also to be in charge of the associated departments in the hospital and dispensary attached to the college; the reason why we recommend the employment of the full complement of twelve professors in the very first year is that, in addition to the above-mentioned duties in the college and the hospital, they are also responsible for the very important duties of the Library and Text-book Committee which we have indicated elsewhere. The duties of this committee is bound, in the beginning at all events, to be very heavy and certain to demand the services of all the twelve professors we have proposed. The expenditure on account of these professors will not exceed, we think, Rs. 30,000 during the first year. We propose that each of these be paid from Rs. 100 to Rs. 300 a month to start with, according to qualifications—Rs. 100, if their qualifications are on a par with those of our L.M.Ps. and Rs. 300, if on a par with those of our medical graduates.

70. As regards the Principal of this college, we are of opinion that, to start with, it is best that the Commissioner of Indian Medicine should, ex officio, hold this office also; it will conduce to both economy and efficiency, in view of the extensive organization which the working of the scheme involves. It will also obviate the need to provide separate quarters for the office of the Commissioner, which may well be housed in the same building as the college. It will likewise make for economy in expenditure on account of clerical staff and other such establishment. As for the pay of the Commissioner, our idea is that it should be fixed on the Indian scale pay for provincial heads of departments and not on the European scale—Rupees 800—100—1,500 should be enough for the present. On this account, we make a provision of Rs. 9,600 during the first year.

71. As regards the mufassal, we have already stated our opinion that the State should actively encourage the Local Boards and private agencies to interest themselves in the starting and maintenance of institutions of Indian Medicine, appropriate to the conditions of the particular locality where they are to be situated, and to help all such efforts, by every means within their power including, of course, the provision of liberal grants, which however, should not be subject to any conditions likely to restrict the freedom of action and initiative on the part of the local body or private agency concerned. As regards the expenditure on account of such grants, that depends, of course, on the extent to which the local bodies and private agencies interest themselves in the work of extending medical relief and medical education along the lines of the Indian systems of medicine. As mentioned in another place, we consider that a lump sum provision of one lakh may be enough to meet the demands of the first year.

Abstract of expenditure.

72. We may now proceed to give a rough abstract of the expenditure likely to be incurred during the first year if our recommendations are put into operation :—

	RS.
(1) Grants to local boards and private agencies	1,00,000
(2) Expenditure (including furniture, appliances, clothing, bedding, drugs, etc., on account of College of Indian Medicine, and associated dispensary, hospital, laboratory, herbarium, etc.—)	3,00,000
(3) Staff. (Commissioner of Indian Medicine, 6 Graduates of Western Medicine and 12 Graduates of Indian Medicine).	60,000
(4) Establishments of the offices of the Commissioner of Indian Medicine, Principal of College and Superintendents of the hospital, herbarium, etc.	10,000
(5) Library and Text-book Committee	5,000
(6) Miscellaneous expenditure	25,000
Total ..	5,00,000

So much for the initial expenditure during the first year ; we may also add that most of it (exclusive of a portion spent on furniture, appliances, etc.), will also be of a recurring nature, as may be easily gathered from the abstract of expenditure given above. We cannot imagine that, at a time when we are voting nearly 57 lakhs per year for the maintenance of the European system of medicine which reaches but a small 10 to 20 per cent of our population and that too mostly those who reside at urban centres, it will be possible for anybody to grudge a comparatively small provision of barely five lakhs for the promotion of those Indian systems which minister to nearly 80 to 90 per cent of our total population and which are practically the only solace of our sick and suffering brethren resident in the vast and far-flung rural tracts of this Presidency.

How Indian Universities can promote Indian Medicine.

73. In discussing the duty of the Calcutta University towards the promotion of the study of Indian Medicine, the Calcutta University Commissioners expressed the following opinion :—" No arguments are needed to establish the position that a system which is described in these terms (for which—vide Vol. V, pages 56 and 57) by some of the most distinguished exponents of the Western system of medicine should be cultivated in an Indian University from the point of view of a historical, critical, and scientific student." We fully endorse this suggestion and trust that, ere long our University will make adequate provision for the pursuit of the study of Indian Medicine along the lines indicated above. We also wish to suggest that, in view of the fact that the study of Indian Medicine is likely to become properly organized and reconstituted in the very near future, the University may well interest itself in establishing a Faculty of Indian Medicine or so reconstituting the existing Medical Faculty as to include within its scope the promotion of both Indian and European Medicine, and in making adequate provision for University chairs and lectureships of Indian Medicine as also for the institution of suitable degrees, schemes of study, and such other measures as are calculated to promote the cause of Indian medical studies in general. In particular, we may well expect of an Indian University to provide for post-graduate lectures on Indian Medicine to be delivered, from time to time, by distinguished exponents of these systems, as also for the establishment of suitable fellowships and scholarships for the due encouragement of scholars of Indian Medicine showing a promising bent for research.

74. We consider it also very desirable and useful that either the University or the State or both should provide for Chairs of Indian Medicine in connexion with the existing centres of Western medical education, so that the students of European Medicine may benefit themselves by a knowledge of those valuable principles and practices of Indian Medicine which it is well for the practitioners of every system to know, in the interests of their own science as also of humanity in general.

Charitable Endowments and the Promotion of Indian Medicine.

75. There has been no time in the history of civilised humanity when the perennial stream of private charity and public beneficence has not flown in the direction of providing medical relief to sick and suffering humanity; the flow has sometimes been abundant and sometimes thin; but it has never entirely ceased. Religion has at all times and in all countries actively interested itself in this question: and history has recorded how medical relief has always been one of the main causes for the promotion of which humanitarians have ever striven right nobly, no matter whether they belonged to one religion or to another or to none, and how the institution of hospitals and medical schools has been one of the regular features of all ancient religious foundations—whether it be a Hindu temple or Mutt, a Buddhist Vihara, a Christian Church or Monastery, or a Muslim mosque. And if to-day medical relief in Europe and America is so widespread as to be within the easy reach of everybody, that has been made possible, not so much by State-aid or State-support as by the munificence of private bequests and organized public charities. To this day, almost all the big and famous hospitals of the United Kingdom are, in a very real sense, private institutions, founded and maintained by private bodies or corporations. It is quite unnecessary to go here into the causes—historical and other—why the ancient Indian tradition in this respect has, in recent times, suffered a severe set-back; but, it is some consolation for us to know that the ancient light is still burning, though dim, amidst us, as evidenced by the Ayurvedic hospitals and schools maintained out of the funds of the Shri Kannika Parameswari temple in the city, the Shri Venkatachalapathi temple at Tirupati and such others, as also by the Ayurvedic hospitals maintained by the late lamented Pandit Gopalacharlu, V. Krishnaswami Ayyar and Kalavala Brothers of pious and unforgettable memory. It is likewise a very welcome sign of the times that within the last one year alone, there have sprung up in the city and elsewhere, a fair number of institutions providing medical relief along the Ayurvedic, Siddha and Unani lines; and we have good cause to believe that the mere move of our Government in appointing this committee has contributed not a little to re-awaken the slumbering spirit of our ancient tradition concerning the establishment of charitable institutions for providing free medical relief and medical education. We fervently hope and pray that this altered and hopeful outlook may grow from more and more, and that by the united efforts of the State, the local bodies, the Universities and the future Kalavala Brothers, Rockefellers and Otto Beits among us, we shall soon be able to bring adequate and efficient medical relief within the easy reach of all who need it throughout the length and breadth of this vast Presidency.

76. In this connexion, we cannot but refer to a question of topical interest which is now attracting widespread attention; we refer to the question of making available the surplus funds of our Hindu religious and charitable endowments to the cause, among others, of medical relief and medical education. Ancient texts and traditions as well as present practices and usages are in such full conformity with the religious, charitable and legal nature of such a step that it is with great surprise that we learn of doubts having been expressed in some quarters as to whether such endowments could be legally applied for such 'secular' purposes as the promotion of Medicine. It seems to us that such doubts are mostly the result of indiscriminate application of Western notions to the working of Eastern institutions. In the first place, it is foreign to Hindu thought and tradition to divide off things into two water-tight compartments the 'religious' and the 'secular', as the Westerners know it. In the next place, by no stretch of imagination, can it be argued that the promotion of Ayurveda is beyond the pale of Hindu religious charity. We are not concerned here with the question whether or not Hindu endowments could be applied to purposes which may serve the interests of non-Hindus as well, although one may be permitted to doubt whether the relief of sickness and suffering of *any* human being, irrespective of race, religion, nationality and the like, would not be an act of true religious import and worship, dear to the heart of the one God of all nations and peoples, and whether such a step is not permitted by the example of the many instances of undoubted Poortha acts of the Hindus as, for instance, the sinking of public wells which would be of use to all travellers—Hindus and non-Hindus alike. It may be, that practical considerations of various sorts justify the limitation of the

application of Hindu endowments to purposes calculated to promote the interests of the Hindus only ; but, even so, one fails to see how the promotion of medical relief along Ayurvedic lines could be put out of the pale. If the promotion of Ayurveda—a subject which, according to some authorities, is a portion of the eternal Vedas themselves while, according to others, it is one of the Upangas of the Vedas—if this is to be out of the pale, what next, we wonder. For our part we cannot believe that the Hindu community generally, would endorse or permit such an exclusion.

Summary and conclusions.

77. (1) It is a mistake to think that encouragement of Indian Medicine consists merely in promoting the investigation of a few indigenous drugs. It is likewise a mistake to think that a knowledge of the Science of Indian Medicine is not necessary for a doctor who is to investigate the indigenous drugs.

(2) Foundation of Chairs of Indian Medicine, in existing schools and colleges of Western Medicine, may be useful in helping Western trained doctors to acquire a knowledge of the essentials of Indian Medicine ; but that is not enough to ensure the progress of Indian Medicine itself, any more than the institution of pandits and munshis in our Arts Colleges is enough to ensure the promotion of Oriental classics or vernaculars.

(3) The *sine qua non* for the ordered progress of our indigenous systems is the establishment of a new Department of Indian Medicine directed by a Commissioner of Indian Medicine working under the Minister holding the portfolio of Medicine and Public Health. It is desirable that the general policy of this new department is directed by a ' General Council of Indian Medicine.'

(4) It is necessary to train as rapidly as possible, a large number of qualified practitioners of Indian Medicine who will be fully self-sufficient and efficient to deal with both medical and surgical ailments ; to this end, it is highly desirable that students of Indian Medicine should come into actual touch with the practice of Western methods especially on the surgical side.

(5) To attain the object specified in the above paragraph, we think it necessary that the Government should immediately establish colleges and schools, hospitals and dispensaries for the Indian systems of medicine. If the Government find it impossible to do so under the present conditions, we suggest, as an alternative, that the existing centres of European medical education and medical relief should be made to subserve the interests of Indian systems of medicine also.

(6) In the best interests of Science and suffering humanity, it is best that the followers of each system should appreciate and learn the excellences of the other ; to this end, it is highly desirable that the followers of either system should learn to ring out the existing feelings of mutual dislike and unhealthy isolation, and ring in the spirit of mutual helpfulness and fraternal co-operation.

(7) One of the greatest needs of the hour is the willing and enthusiastic co-operation of Western trained doctors sufficiently learned in Indian Medicine as to be capable of visualising its immense potentialities and therefore zealous in helping Indian Medicine to rapidly regain the ground it has now lost, especially in the field of surgery.

(8) One of the first studies of the Commissioner of Indian Medicine will be to organize the three committees mentioned below :—

(i) Medical Administration Committee.

(ii) Library and Text-book Committee.

(iii) Medical Education Committee.

(9) Under our present conditions two types of practitioners are required to be trained, with two standards of proficiency, a higher and a lower, the principal aim in the training of the latter being the rapid multiplication of fairly efficient practitioners who may be expected to settle down or take up employment in rural areas, while the chief aim in the training of the latter should be to provide for high grade general and consultant practice, specialization, teaching and research. Suitable provisions should also be made for allowing the lower-grade practitioners to qualify themselves for the higher standard of proficiency.

(10) Vernacular is to be the medium of instruction in all lower grades ; in the higher grades, the question of using the classics or the vernacular as the medium may be left to be settled by the teaching staff in any particular institution or linguistic area.

A working knowledge of English is desirable for all students—more especially for those preparing for the higher standard.

(11) The standards of preliminary qualification to be fixed for each of the two standards mentioned above may well be modelled on that laid down for the certificates of proficiency in oriental learning granted by our University; students who have followed more the study of 'The Humanities' than that of 'The Sciences' should not be debarred from pursuing a medical career.

(12) Every scheme of study of Indian Medicine, whether Ayurveda, Siddha or Unani, should make adequate provision not only for the efficient training in subjects appropriate to itself but also for the teaching of the essentials of whatever is valuable in Western Medicine, e.g., Anatomy, Physiology, Surgery in all its branches, Bacteriology, Medical Jurisprudence including Medical Ethics, History of Medicine and so on.

(13) To attract an adequate number of young and promising youths to the service of Indian Medicine, we recommend the adoption of the following among other measures :—

(i) Deputing young and promising graduates of Western and Indian Medicine to study Indian and Western Medicine respectively. They are to be first recruited into permanent Government service on the pay and prospects of the corresponding members of the existing medical service and then sent on deputation.

(ii) Granting of suitable scholarships to promising youths and guaranteeing them suitable employment.

(iii) Offering certain prize posts for the first two or three, from among those who qualify every year from recognized institutions.

(14) We recommend the establishment in Madras of a central College of Indian Medicine and an associated hospital. The cost of this institution is to be wholly met from State funds, and the resources as regards laboratories, dissection halls, clinical teaching, etc., of existing institutions are to be made available, as far as possible, for the purposes of the new College of Indian Medicine.

(15) Approved institutions of Indian Medicine maintained or established by local bodies and private agencies should be afforded State aid and such other forms of State encouragement as are accorded to similar institutions of Western medicine.

(16) An Indian University may well be expected to interest itself in the promotion of Indian Medicine by adopting such measures as the following :—

(i) Establishment of a University Chair of Indian Medicine.

(ii) Providing for Post-graduate lectures and courses.

(iii) Establishment of a Faculty of Indian Medicine, with a corresponding Board of Studies, Examination Boards, and so on.

(iv) Founding of Research fellowships and scholarships.

(17) It is fervently hoped that, as in every other country, private and charitable agencies will contribute their utmost to promote the cause of medicine; in particular, we appeal to those responsible for the management of our religious and charitable endowments to promote the cause of Indian Medicine in all legitimate ways open to them, and to supplement, as far as their resources permit, similar efforts of the State, the Local boards, the University and other private agencies.

(18) We ask of the Government to make a provision of only five lakhs in their next year's budget for the promotion of Indian Medicine.

78. **This report would not be complete** if we do not place on record **our high appreciation of the invaluable services** rendered to the committee by the Secretary, **Dr. G. Srinivasamurti. He has given evidence** of great ability, indefatigable energy, **thorough grasp of the subject and sound judgment** in the discharge of a delicate and **difficult work which he had to do. His keen** sense of fairness as a student of Science **has contributed not a little to his arriving** at conclusions unbiassed and impartial. **We therefore take this opportunity of tendering** our most **grateful thanks to him.**

79. We also desire to offer our warmest thanks to our correspondents, witnesses, the members of the various sub-committees, and all others who helped us in our work.

80. Our special thanks are likewise due to the Governments of the various Provinces and Indian States who were very helpful to our touring sub-committee and to the Local Government to whom we were under continual obligation for providing us with the facilities necessary to carry out our work to this completion.

MUHAMMAD USMAN (*Chairman*).
A. S. KRISHNA RAO.
U. RAMA RAO.
A. LAKSHMIPATHI.
M. SUBRAHMANIA AYYAR.
K. G. NATESA SASTRI (with a supplementary note).
C. T. ARUMUGAM PILLAI (with an additional note).
T. R. RAMACHANDRA AYYAR.
A. T. PALMER (with an additional note).
G. SRINIVASAMURTI (*Secretary*).
} *Members.*

A note by Mr. A. T. Palmer, M.L.C.

I accept that the Ayurvedic and the allied systems of medicine had a great past and that they did their good services in ancient times in common with similar systems in other countries without which peoples of the world would have well-nigh been extinguished; but I am not sure whether those ancient systems can now stand comparison with the modern systems for the simple reason that scientific knowledge has greatly advanced since. For my own part I am not in favour of the Government establishing hospitals and schools of indigenous systems of medicine at their expense till more is known about the sufficiently of these systems.

But at the same time fact remains that the indigenous medicines are cheap, are very efficacious in many of the ordinary diseases, and what is more are very popular especially in the villages. It is therefore but right that the Government should give some helping hand for the encouragement of the indigenous systems of medicine seeing that it served a good proportion of the population. I propose the following methods for the purpose:—

(1) A Board of indigenous systems of medicine should be appointed by the Government consisting of seven members, three of whom are versed in the indigenous and modern systems of medicine, and four of whom are accredited masters of Indian systems.

(2) This Board should be under the Minister for Local Self-Government.

(3) The members of the Board may be paid a fixed honorarium.

(4) An adequate sum may be placed in the hands of the Board for the different functions the Board may be called upon to discharge.

(5) The functions of the Board shall be—

(*a*) to examine the practitioners and register their names on payment of a certain fee (the examination should be in the preparation of drugs, the diagnosis of diseases and treatment);

(*b*) to collect books dealing with Ayurvedic, Unani and Siddha systems of medicine, translate them, and prepare authoritative annotations; and

(*c*) to inspect hospitals run on indigenous systems of medicine and recommend necessary Government aid for their maintenance.

(6) I am of opinion that after ten yeras or so, there should be an enactment penalising all unregistered practitioners of indigienous systems of medicine; in other words registration shall be optional for ten years from now and compulsory thereafter.

A. T. PALMER.

A note by M.R.Ry. K. G. Natesa Sastri Avargal.

The memorandum supplied by the Secretary is a brilliant masterpiece of a sound, calm, erudite and impartial inquirer after Truth fully dealing with the indigenous systems of medicine in all their various aspects of Science, Art, efficiency and utility. It will therefore be superfluous to add a note to it, had it not been for the fact that certain misconceptions have to be dispelled, of minor importance though they be.

It is likely that some may think that Ayurveda is best understood and handled by men who are graduates of western medicine also. From this view I respectfully beg to differ. The training in the western system of medicine has certainly its advantages, but on that ground it will not be charitable to conclude that indigenous vaidyas could not have understood their systems as intelligently as their allopathic brethren who also happen to be vaidyas. From the experience gathered in the course of the oral examination of witnesses and from the written statements submitted to the committee by the indigenous practitioners, several of whom any country may be proud of, I have come to the conclusion that the indigenous vaidya without coming in contact with the lustre of western medical knowledge is better able to understand the system which he follows and expound it with greater force than his brother vaidya with a knowledge of the allopathic system. For instance, who is not impressed with the width of the Ayurvedic knowledge of Rao Bahadur A. Krishnaswami Ayyar, B.A., of Ayurveda Bhushna M. V. Sastri of Mangalore and the deep erudition of Pandit Narayana Ayyangar of Madura, not to speak of other brilliant students of Ayurveda as Vaidyaratna R. Bharata Sastri, Vaidya Visarada K. A. Venkatachala Sastri, Ayurveda Bhushana K. Subrahmanya Sastrial, Professor of Madras Ayurvedic College and Ayurveda Bhushana M. Duraiswami Ayyangar, Vaidya Thirtha G. Subrahmanya Sarma who has made a special comparative study of the "Active Principles of medicinal drugs" as understood in the West and in the East, Mr. Narayanaswami Ayyar of Shiyali who has made a special study of chemistry, as obtaining in the Siddha schools of medicine and Vaidya Bhupathi S. Krishna Rao, the Intelligent exponent of Siddha school. When therefore the hour of trial comes it is these people who will be of much help in reviving the lost glory of the indigenous systems of medicine. It must not be understood that I be little the value of a knowledge of western medicine, but I do not want that pure vaidyas should be considered of less value than a medical man of a combined knowledge. It is possible that a combination of the western knowledge with the eastern leads sometimes to disastrous results. Though truth is always the same without racial or geographical limits yet the difference in the ideals and modes of thinking in the East and the West is so great that impact rather disintegrates than strengthens and fuses the two systems. Exactly therfore it is that many of the witnesses who appeared before our committee were very strong in emphasising that they do not want that the scientific basis of medicine as obtaining in the West should be incorporated in the indigenous systems but they must be allowed to think for themselves in terms of their own scientific terminology which has withstood the ravages of time. What then they really want is that the art, especially in surgery in all its various branches, which had been gradually neglected and finally disappeared owing to various causes which began to operate directly after the begining of the decline and down fall of India as political force from the Mahabharata war 5,060 years ago—that art should be revived so that Ayurveda will again see its palmy days as of yore. There is much truth in what these witnesses have said. The Saddler Commission have admitted "the swiftly extending influence of new ideas which the development of the western system of education conveyed; their disintegrating impact upon many ancient traditions and customary ways of life; the stimulus which those ideas have given, the tension which they have caused" (Calcutta University Commission Report—Chapter XXX). Hence if Ayurveda is to develop as a separate entity, it ought to be allowed to think for itself and achieve the desired result in the light of knowledge gained by such a process. By 'separate entity' I do not mean that the Ayurveda and the allopathic system of medicine should for ever be rival schools with no bridge to approach each other. It has been clearly pointed out in our main report and also in the memorandum of the Secretary (Appendix I) that such rivalry is not desirable but immensely in jurious to both, and that sooner or

later it should disappear. I, therfore, desire that the art should first be revived and when, by that process, Ayurveda is able to stand on its own legs the exponents of the two systems of medicine should come in contact and try to fuse. If, on the other hand, fusion takes place earlier, the impact will only be, in the thoughtful words of Sir John Woodroffee, "a conflict of cultures" which will be disastrous to the weaker of the two, the Ayurveda. Absolute fusion can never be achieved; for Ayurveda will never consent to lose its characteristic of thinking in terms of its own peculiar religious philosophy of Satwa, Rajas, Tamas. Nor will the allopath be converted into an Ayurvedic man unless he surrenders his way of thinking and accepts the other one. For instance western medicine is the same in all modern civilised Europe, whether it be France or Germany or England or Italy. But on that ground a French medical man has not left off thinking in French or an English man in English or a German in German. The same will be with the case of Ayurveda. Without losing nationality both will be able to exchange ideas. To understand each other a certain amount of equality must be reached. It is therefore that the witnesses were very particular in having the lost art restored as early as possible. It may also be mentioned in this connexion that even in surgery the art is not absolutely lost, as these are still a few who successfully practise the art and are able to introduce innovations, I mean men like Harana Chandra Chakravarthi, the renowned living commentator of Susruta. What can therefore be said is that such men who know the art are inadequate and it is only just, that such a drawback should be remedied as early as possible.

This leads me directly to the recommendations which are to be made. I need not repeat that I fully agree with the various recommendations made in the report, but in the light of what I have said above I desire that in the begining the indigenous medical colleges and hospitals should be maintained separately and away from the allopathic medical colleges and hospitals. I do not share the view that derth of funds is a bar to achieve this end. It has been pointed out in the main report that something like 57 lakhs of rupees are being expended on the maintenance of the allopathic system. Could not a fifth of this sum to begin with be spent on the ancient systems of medicine which are indigenous to the land and benefits nine-tenths of the population ? It does not seem reasonable that the indigenous systems of medicine should be asked to prove their bona fide scientific basis before such a big sum may be expended for their maintenance. The allopathic system was never asked to prove its scientific basis. If that has been proved long ago, Ayurveda also has proved its scientific basis long long ago in days of its maharishis and kings. Moreover it is not just to compel the follower of Sri Sankara's monism or Adwaita, to prove his tenets to the satisfaction of Sri Ramanuja's qualified monism or Visishta-dwaita; or a Catholic Christian, to the satisfaction of a Protestant. And even this impossible feat has been achieved as is evident from the Secretary's memorandum based on the statements of expert witnesses. I therefore think that the recommendation for 5 lakhs of rupees is insufficient for the object in view. A big cut must be made anywhere in the budget and at least some 10 lakhs should be ear-marked for the purposes of the indigenous systems of medicine.

As regards the desirability of the knowledge of English in the higher grade of Ayurvedic study, this desirability must be the spontaneous wish of the Ayurvedic men but should not be given preference in the syllabus to be drafted by the Committee which will be appointed. The question is whether Ayurveda should remain Ayurveda and not whether it should be ripened by artificial means with the aid of English. The Rishis were able to think and give Ayurveda to the world; and without a knowledge of Ayurveda, the allopathic system developed in its own way almost to an admirable degree. What was true of the past will also be true of the future. It must be left to the Ayurvedists to decide whether they want to be in contact with the outer world or not. The "certificate of proficiency" degree and the higher M.O.L. degree have been framed without consulting the pandits at large. A select few in the Senate thought that it ought to be there and it is now there. We must not copy their mistake. As for the other recommendations, I quite agree with the main report.

K. G. NATESA SASTRI.

A note by M.R.Ry. Pandit C. T. Arumugam Pillai Avargal.

Introductory.—The Ayurveda or Siddha System of Medicine is a complete, original, and self-reliant science which has had a continuous and widespread existence, giving ample scope to individual practitioners from time immemorial for original researches both in Diagnosis and Treatment. In spite of the fact that numerous works on medicine by Siddhas have, for lack of patronage and from various other causes, since become extinct, even those that are available after the lapse of ages are sufficiently large in number to form a fully developed science. It is a pity that these great works to which we find frequent references in works that are now extant have been allowed to disappear. But, if it were any consolation to say it, they have only shared the lot of many a monumental work which are reverentially mentioned and quoted from the classical works of Tamil literature.

Great as the Science of the Ayulveda is even in so far as it has yet survived, it is a gladsome feature to note that it has been not only kept alive, but extensively practised and to very good purpose, not alone as a cultivated Art, but with an intensive study of the Science. It is therefore a living science whose possibilities of advancement and usefulness to humanity are commensurate with the opening that is made for its cultivation.

2. *Antiquity of Tamil Culture.*—Of the great cultures of the world such as Celtic, Aryan, Teutonic and Semetic which have differed from one another in almost every respect of human interest and character, the Tamil culture is a distinct one which marks out the Tamils as separate race. It has indeed passed through various vicissitudes, but in spite of all the influences of foreign contact of many kinds, it has preserved through ages and changes, its innate genious and individuality in features and stature as in ways of life and thought. We are thus the inheritors of a hoary civilization which has flourished through prosperity and adversity and survived to our day, bringing to us a rich and noble heritage of great achievements in every branch of human activity and knowledge. Small wonder then that we are now in possession of a literature bearing on Science as well as Art which is of the highest quality.

3. *Traditional genesis of the Ayulveda.*—The Ayulveda Sastras composed by different Siddhas in different periods trace the origin of Science to Lord Siva, the fountain head of all knowledge; from Him it passed through Sri Uma Devi to Nandi Devar, and from him in succession to the Siddhas. This account differs entirely from the traditional account of the Aryan system. There is ample evidence however to show that these two systems have interchanged a great deal, even to the extent of borrowing the technique in language, so much so that it were an impossible and thankless task to try to apportion the shares of indebtedness of each to the other. But it is significant that while the very technique is common to the two systems to a considerable extent, there are differences between them which render it equally impossible to unify them into a single system.

4. *Diseases—How they spring.*—Agasthyar and Tirumular, two of the greatest and earliest of Siddhas who have written monumental works on Medicine, embracing both diagnosis and treatment, lived at different periods and represent independent lines of succession of disciples. Both give an almost identical account of the origin of diseases in the human body, which is based on one and the same physiological principles. In the first place, they hold that, but for extraneous causes for which man himself is responsible, the human body is not subject to disease. Now, these causes are classed under two heads: Karma and Muyarchi. Whichever way diseases are caused, they are all due to disregarding of the Laws of Health.

5. *Diagnosis.*—In diagnosis the Siddhas class diseases under the two heads of Hethu (root cause) and Lingam (outward manifestations). Here agian, there is an apt comparison which they quote to much good effect. Diseases in the human system are primarily due to the change of state of Vatha, Pitha and Kapha; and the Siddhas based their diagnosis on the understanding of the manner and degree of such change of state. The human system is compared to a tree wherein the diseases that affect the tree are manifestered in the leaves and branches in visible form, while the real cause lies at the root, as may be verified by the presence of insects there. Holding these views, the Siddhas place great reliance on the examination of Vatha,

Pitha and Kapha as they show themselves in the Nadies and have practised and brought it up to such a perfect Art, that even before a disease manifests itself outwardly, they are able to deduce its presence in the body with the help of Nadies. Next only in importance to the Nadies is the examination of the urine in which they have discovered five tests, viz., colour, density, smell, froth and quantity. It is to be noted that they have so perfected the system of urine examination, that they are able to state clearly by this examination alone, the corresponding derangement of Vatha, Pitha and Kapha. Im addition they have a system of testing the urine with the help of Thailams which greatly helps in diagnoses. This science is called the Neer-Nerakkuri-Naikkuri Shasthram.

They also practice the rest of the eight kinds of diagnosis in use in the other systems of Indigenous Medicine.

6. *Treatment.*—The Siddhas class treatment of diseases under three heads—(1) Deva, (2) Manusha, (3) Asura treatments. The last refers to Surgery and it is admittedly meagre; a large number of surgical cases are however held by Siddhas to be capable of being treated sucessfully by their great advancement in medicine. The Manusha treatment comprises of 30 varieties of medical aid, in all of which herbs are used. But it is the Deva treatment which the Siddhas have made their own; in this Basmams, Chendurams, etc., are used; with the help of these they treat all the diseases for which the Manusha treatment employs its 30 herbal varieties. With the help of these treatments they are able to cure diseases up to nine Avasthas or stages of development, out of ten; while the Manusha System proves ineffective beyond the fifth and in some cases the third Avastha. It is somtimes urged against the Deva system of Tamil medicine, that it contains poison which is injurious to life. As a matter of fact, the Basmams, etc., correctly prepared according to the preparations of the Siddhas are absolutely free from any poison and are being freely used by all practitioners of this system. Defects in the manner of extracting these medicines are no doubt bound to make them injurious, but the same must be said with equal force of all herbs and drugs also.

In this connexion it may perhaps be mentioned that the very word for medicine in the Siddha Ayurveda (அவிடதம் = அ + விடதம்.) connotes the significant meaning "that which is free from poison", a circumstance which must conclusively prove that the Siddhas were fully alive to the possible danger of neglect in the preparation of medicine. For the same reason too, they have written a separate work in which they deal exhaustively with the manner of extracting medicines properly. They show clearly that whatever the kind and quality of the medicines prepared and however harmless they may be (such as pepper and ginger) yet they may become injurious, if not properly prepared.

7. *The Siddha System and the other Indigenous Systems of Medicine.*—Seeing that the two systems of medicine have been in contact with each other for many centuries, it is to be expected that there should be much in common between them in diagnosis as well as treatment. Indeed there is much in common. But the wonder is that in spite of the common features found in both, they are as much apart as any two distinct systems of medicine can be. The quality and nature, not only of the medicines themselves, but of the *Anupanams* and the *Pathiyams* also, are based on different principles and follow different methods.

8. *Conclusion.*—I am afraid that, in making these remarks, I have confined myself exclusively to the facts bearing upon that system of Indian Medicine which I have been practising with more or less success for more than 35 years and on which my observations are bound to be more pertinent than upon the other two sister systems. But I wish to state with due emphasis that all knowledge and experience that I possess of those systems point to the conclusion that they are no less advanced and useful than the Ayulvedic System of the Siddhas. I am further convinced that these three systems are bound to help one another and also help themselves better, if they can work harmoniously side by side as three sister systems should. I may perhaps take occasion to make one more observation before I close my note. The end of the healing Art should be, I deem it, not merely to heal, but to prevent disease. Policemen have been known to watch for crimes to be committed, for the glory of

detection, forgetting meanwhile that their primary duty is to prevent crime. Books there must be in good number, large and small, and highly popular, dealing with instructions to the public to shun acts and habits injurious to health (individual as well as public) and to do such acts and observe such rules as would conduce to the preservation and promotion of health. The Siddhas, for instance, have dwelt at considerable length on what is called Kappu (prevention) in which laws of health, and habits and observances contributing thereto, are embodied in lucid and musical verses. Lastly I wish to place here on record that owing to my regrettable ignorance of the English language, I do not feel quite confident as to whether I have fully grasped the spirit of the contents of the main report. I have therefore thought it desirable to place my views as succinctly as I can in this note. I must in justice to myself make the request that I may be taken to have given assent to the Committee's report only in so far as it does not stand in opposition to my views as stated herein.

C. T. ARUMUGAM PILLAI.

APPENDIX I.

A MEMORANDUM

ON

THE SCIENCE AND THE ART OF INDIAN MEDICINE

BY

G. SRINIVASA MURTI

Secretary to the Committee on the Indigenous Systems of Medicine, Madras.

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CHAPTER I.—PRELIMINARY OBSERVATIONS.

Terms of reference.

Many and varied have been the objections that have been raised, from time to time, against the recognition and encouragement by the State of the indigenous systems of medicine like the Ayurveda, the Siddha and the Unani; these objections have always been challenged by exponents of these systems as well as by others interested in their promotion; the resulting controversy has sometimes been mild and sometimes wild; some of the objections are trivial while others are vital; and round none has the fire of controversy raged so fiercely as on the central question whether these Indian systems of medicine are scientific or not. But, unfortunately for the cause of science, the controversies on this topic have, in the recent past, been generally characterized by the exhibition of more heat than light—more of the consuming fire of political or partisan feeling than the cold logic of scientific reasoning. The object of this memorandum is, however, to view things from a scientific standpoint only and stimulate scientific discussion on a subject which, it is clear, can now be neither ignored nor shelved. Moreover, the Government have expressly stated in their terms of reference to this Committee that "the object of the enquiry is to afford the exponents of the indigenous systems an opportunity to state the:r case fully in writing for *scientific criticism* and to justify State encouragement of these systems." I am aware that objections have been raised in some quarters against this attitude of our Government in this matter and the question has been asked, "Why should this demand to produce their credentials be made of the Indian systems only and not of their rival the European system also, and why should the Madras Government alone order a *scientific* enquiry which the sister Governments of Bengal and Bihar have not asked their Ayurvedic and Unani Committees to undertake?" My answer to this question is two-fold: in the first place, the Government have long ago judged in the matter of the European system and recognised it as a scientific one; there is *now* no question of according it any *new* recognition; the case with the Indian systems, however, is quite different; they have now no State recognition; for some years past, however, it is being urged upon the Government that they did wrong n withholding State-recognition and State-support from the Indian systems of medicine and that the wrong should soon be righted; at the same time the Government have also been authoritatively told that State-recognition has been rightly withheld and that it is wrong to spend public funds in supporting systems that are no better than quackery. What other or better thing can any Government do under the circumstances than order a scientific enquiry into this question and keep an open mind till the results of this enquiry are before them? That the attitude of our Government in this matter would commend itself to all scientific minds generally may be gathered from the following extracts from an editorial in the last April issue of the *Indian Medical Gazette*—a journal edited by distinguished members of our Indian Medical Service:—

"We understand that the Government of Bengal has recently appointed two committees to 'consider and report, after taking such evidence as may be thought necessary, what practical steps can be taken for the restoration and development of the Ayurvedic and Unani systems of treatment, with special attention to the question of the teaching of those systems with any necessary modifications, under proper supervision and control'.

"On each of these committees there are several representatives of modern scientific medicine, as well as representatives of the systems whose restoration is contemplated.

"The position seems to be rather illogical in that the members of the committee do not appear to have been asked whether it is desirable or useful to restore the systems; they have been asked to accept the restoration as a policy which has been agreed on, and they are merely asked to draw up a scheme by which that policy can be given effect to. *In Madras, the procedure has been quite different; there an enquiry into the value of the old systems has preceded the consideration of the best*

means of restoring them (Italics mine). In the Madras Government order of 10th August 1921, the following sentence occurs :—' The object of the proposed enquiry is to afford the exponents of the Ayurvedic and Unani systems an opportunity to state their case fully in writing for scientific criticism and to justify State encouragement of these systems '."

Moreover, is it not in the interests of the Indian systems themselves that their exponents should prove their case to the hilt, if, as they assert, they have a strong case in their favour ? And does not their case become irresistible if they can convince even their opponents and not merely their already converted friends ?

A personal explanation.

2. It is therefore clear to me that the first question we must address ourselves to is to decide whether the Indian systems of medicine are scientific or not ; this is certainly no easy matter, more especially to one like me who is supposed to belong to a "rival" camp. There is a school of Psychologists who tell us that, generally speaking, all of us are liable, in respect of such questions, to suffer from bias of some sort or other, our opinions and predilections being more or less definitely set by the time we are twenty-five or thirty, so that after this age we are all, more or less like the old Bourbons, capable of learning nothing, forgetting nothing ; having now passed this age limit, it is possible I am suffering from bias of some sort or other, which, I suppose, acts somewhat like a piece of distorting lens permanently attached to my eye, so that I can view things, not as they are in themselves, but only as transformed by what I may call my special "Bias-lens" ; this, however, is a disability which I share with many others over 30 ; but, it is also possible that I am suffering from an additional or double dose of bias ; for, I happen to be an humble votary of Western sciences in general and Western medical science in particular ; and I feel profoundly grateful for the mental training and the scientific outlook, which, I believe, they have given me ; and with every year of my life, my reverence for them has grown from more to more. Hence it has sometimes occurred to me whether I could be a competent judge of what are sometimes spoken of as the "rival" systems ; but, there is one supreme lesson which science teaches to all its votaries ; and that is, to be loyal to truth more than to any system, and to be willing and even eager to seek, appreciate and accept truth wherever it may be found—even in the camp of our supposed rivals. It is in this truly scientific spirit that I have ventured to judge the Indian systems of medicine ; at every step I have tried my very best to put myself in the position of my supposed rival, and view things as scientifically as I could, without any bias one way or the other ; and with a view to neutralise any unconscious bias that may operate prejudicially to my "rivals," I have deliberately interpreted their teachings in as good a light as I could possibly view them, even at the risk of being charged by some as having claimed too much for the Indian systems ; at the same time, it is also possible that, in the judgment of some others, I have not claimed enough ; to both of these, viz., to those who would consider the case for Indian systems is overstated as well as to those who would consider it understated, I would appeal to remember that, where in their judgment I have failed to overcome bias, it is due not to lack of any conscious effort on my part but to the unconscious effect of either my Indian birth or Western training, as the case may be, both of which, I have learnt to value immensely in spite of their possible tendency to create bias. With this explanation I must leave it to others to decide how far I have been successful in the task of interpreting the Indian systems aright.

The Thesis.

3. It is perhaps just as well that I state at the very outset the conclusions, which I have formed from such study of the Indian systems as I have been able to make, so that it may be known beforehand what it is that I am striving to elaborate in this Memorandum. I have studied these systems from the two standpoints from which every system of medicine has to be judged, viz. (1) as a Science and (2) as an Art ; and my conclusions may be briefly summed up as under :—

(1) *As a Science.*—The Indian systems are undoubtedly scientific ; their general principles and theories (both in subjects of preliminary scientific study like Physics, Physiology and the like, as also in the subjects of Medical Science proper, like Pathology, Medicine and so on) are quite rational and scientific.

(2) *As an Art.*—As practised at present, Indian systems are not self-sufficient. If we divide Medical Science broadly into two sections, viz., Medicine and Surgery, the Indian systems are, generally speaking, self-sufficient and efficient in Medicine, while in Surgery they are not.

In both Science and Art, there are points which Indian and European systems can well learn from each other with immense profit to both; that they may so fraternise and learn is a consummation devoutly to be wished, not only in the best interests of science but also of what is even more important than science itself, viz., suffering humanity.

Such is my thesis, which I now proceed to develop, under the following headings:—

(1) Scientific methodology—Pratyaksha and Anumana.
(2) Subjects of preliminary scientific study—the Panchabhuta theory.
(3) Physiology and Anatomy—the Thri-dhatu theory.
(4) Ætiology and Pathology—the Thri-dosha theory.
(5) Diagnosis and treatment—the Rasa-Guna-Veerya-Vipaka-Prabhava Pharmacology.
(6) Indian systems judged from the standpoint of Art.

CHAPTER II.—SCIENTIFIC METHODOLOGY.

The Ayurveda, the Siddha and the Unani—their mutual relationship.

4. It is round the question whether or not the Indian systems have any scientific methodology at all that there has been a good deal of controversy and confusion of issues; and if we are to return any precise and definite answer to this question, we must first be clear as to what we exactly mean by "science" and "scientific method"; for, in the past, a good deal of confusion has been caused by failure to settle this preliminary point, and discussions have been carried on with little mutual understanding on the part of the controversialists. Each side has argued and proved its case to its own entire satisfaction, on the strength of testimony, which it had learnt to regard as the most satisfactory evidence for truth; if the student of Western medicine demanded direct observational or experimental evidence, the orthodox exponents of Ayurveda would perhaps say that while such testimony is valid enough, as far as it goes, yet it is not enough to prove or disprove a case, which must ultimately be judged by reference to that supreme testimony of the highest evidential value, viz., the revealed scriptures or the competent testimony of "the knowers of the Vedas." It is obvious that all discussions are futile so long as the disputants are not agreed on the very criteria which constitute the proof of any proposition advanced. Hence it becomes necessary to enquire whether the European and the Indian methods of investigation have any common foundations or criteria of belief, to which both of them can appeal to test the validity of any fact or proposition that is at issue; to this end, I propose first to lay down in broad outlines the essentials of scientific method as pursued by both the Western and the Hindu scientists, and then proceed to show that both have common foundations and a common platform where both can profitably meet and learn from each other.

Regarding the methodology followed in the Unani system, I regret I cannot be definite; for I know neither Arabic nor Persian nor even Urdu, and it would be unwise in so important a matter to rely solely on translations. I have, however, the high authority of the renowned Janab Hakim Ajmal Khan Bahadur of Delhi to say that Arabian medicine was founded on Ayurveda [1]. As regards the Siddha system, its fundamental bases such as the Thri-dhatu Physiology and the Thri-dosha Pathology are common ground between it and Ayurveda. Hence it is submitted that though in the following discussion of the scientific bases and methodology of the Indian systems, it is Ayurveda that is mostly referred to, yet we may take it that, so far as the present topic is concerned, what applies to Ayurveda applies generally to the Siddha and the Unani systems as well.

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[1] Vide the publication entitled "The Scheme of the Ayurvedic and Unani Tibbi College, Delhi", and appendix A attached thereto.

The Essentials of the Western Scientific Method.

5. Some people are in the habit of talking of the scientific method as though it were extraordinarily recondite, knowable only to the elect and the very high in intellect. While this is certainly true of the higher reaches of science, yet there is nothing extraordinarily mystic about the general conception of the scientific method which even the novice cannot appreciate if he wants to; its essential characteristic is a particular intellectual attitude towards any problem that may come up for solution, whether it be a problem in mathematics, physics, economics, æsthetics, education, law, medicine, engineering, state-craft, handicraft, or any other branch of knowledge; many people in the world may be applying the scientific method in their daily round of duty without their being aware of it. "We may get a good lesson in scientific method from a business man meeting some new practical problem, from a lawyer sifting evidence or from a statesman framing a constructive bill" (2). "The man who classifies facts of any kind whatever, who sees their mutual relations and describes their sequences is applying the scientific method and is a man of science" (3). What science demands from its votaries is a severe discipline in the habitual use of the keen eye, the sharpened intellect and the trained mind. The all-observing keen eye of the scientist helps him to observe widely, and collect together as many facts as he can gather. This is often a very laborious process. The sharpened intellect, playing upon the facts so gathered, carefully analyses and catalogues them under certain categories. These categories, viewed from a synthetic standpoint, suggest certain generalizations which include all the facts or phenomena so far observed. The trained mind brooding upon these generalizations evolves a hypothesis, or may be, more than one hypothesis in explanation of, and based on, these observed facts or phenomena. Now, every such hypothesis is merely a claim waiting to be verified; but the claim may or may not be accepted. Experiments are undertaken to test the validity of these hypotheses. All those which are not verified or found valid by experiments are rejected. That hypothesis alone which is shown by experiment to work best, becomes the accepted theory, which, be it noted, is nothing more than the best working hypothesis, among perhaps several that may have been advanced; moreover, its acceptance is merely tentative or provisional, contingent not only on the continued occurrence of verificatory phenomena but also on similar non-occurrence of contrary ones; for, there is really no finality in science; and the scientific method is essentially a hypothetical or experimental method of trial and error. "It treats all 'facts' as data to be tested, all 'principles' as working hypothesis to be confirmed, all 'truths' as claims to be verified. All allegations, therefore, must be tested, and are valued according to the scientific consequences to which they lead. At the outset, therefore, scientific method is content with provisional conclusions that are not greatly trusted; and to the end, it is recognized that the human mind does not respond to the infinite gradations of logical probability, but declares itself satisfied and certain, as soon as the evidence for a belief seems to it adequate. After that, the question is humanly settled unless and until something occurs to reopen it. For there is no absolute *chose jugee* in science" (4). Science then is merely "criticised, systematised and generalized knowledge; that is to say, the student of science takes more pains than the man in the street does to get at the facts; he is not content with sporadic knowledge, but will have as large a body of facts as he can get; he systematises these data and his inference from them, and sums up in a generalization or formula. In all this, he observes certain logical processes, certain orders of inference, and we call this, "*the scientific method.*"

"Of such modes of inference there are no more than there were in the days of Artistotle, who recognized three; (*a*) from particular to particular (analogical reasoning), (*b*) from particular to general (inductive reasoning), (*c*) from general to particular (deductive reasoning). Let us take a few examples.

(*a*) *Analogical reasoning.*—The geologist tells us the story of the making of the earth and describes what happened millions of years ago, and in many cases he relies on analogical reasoning.

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(2) Introduction to Science by Thompson—Home University Library, page 58.
(3) Karl Pearson-Grammar of Science (3rd edition), Part I, page 12.
(4) Professor Schiller in Psychic Research Quarterly—Volume I, pages 12–13.

(*b*) " *Inductive Reasoning.*—This is argument from particulars to the universal, and science is full of illustrations. Galileo had smooth inclined planes made and then, by rolling balls down them and measuring the time and squares of descent, he discovered inductively that the space fallen is always as the square of the time of falling." . . .

" The inductive method may almost be called Baconian, for Bacon was the first to show that the sound way of studying Nature was to work up from particulars to principles. He called his method the 'new instrument'—the Novum Organum. It was founded on the principle that things, which are always present, absent, or varying together, are causally connected.

(*c*) " *Deductive Reasoning.*—This is argument from the universal to particulars, the kind of inference which enables the long arm of science to reach, back through the ages that are past, and forward into those which are to come. By deductions, Neptune was discovered before it was seen. By deduction, given three good observations of a passing comet, we can predict its return to a night." ([5])

Comparison with the Hindu Scientific Method.

6. According to Hindu Methodologists, the process of 'ascertainment of truth' depends on the correct understanding of our sources of valid knowledge (i.e., pramanas or proofs) which are as follows :—(1) The Prathyaksha or direct observation and perception, (2) Anumana or logical inferential reasoning of the nature of induction and deduction and (3) Shabda (Apthavachanam) or competent testimony of 'knowers of the Vedas,' or the revealed scriptures generally.

[This is according to the Samkhya school of thought. It is only right to add that the Nyaya (logic) adds a fourth source of valid knowledge, namely, Upamana (or analogy or comparison), while the Mimamsa (exegetics) has two more still, namely, Arthapatthi and Abhava (Presumption and Privation) ; but, I proceed here on the view that the threefold Samkhya division includes, in itself, both the fourfold Nyaya and sixfold Mimamsa divisions.]

If we now compare the inductive (Baconian) and deductive methods of the West with the scientific method of Anumana, as practised by the Hindus, we find a striking similarity ; for, what is Anumana ? " Anumana (Inference) is the process of ascertaining, not by perception or direct observation, but through the instrumentality or medium of a mark, that a thing possesses a certain character. Inference is therefore based on the establishment of an invariable concomitance (Vyapti) between the mark and the character inferred." ([6]) But how is this Vyapti (or invariable concomitance) to be ascertained ? This is done exactly as it is done by Western scientists, that is to say, by means of observations and experiments, thoroughly checked and tested by the canons of strict scientific Logic. " The observation of agreement in presence (Anvaya) as well as agreement in absence (Vyatireka) between two phenomena, with the non-observation of the contrary (Vyabhicharadarshanam) is the foundation of our knowledge of Vyapti. Obviously, mere observation of their agreement in presence and their agreement in absence is no help in the matter. Take a concrete example. The ass is customarily employed to bring the fuel with which fire is lighted. In a hundred cases you have observed the ass among the antecedents of smoke. In a hundred cases you may have observed that when there is no ass there is no smoke. This is no warrant for concluding a relation of cause and effect between an ass and smoke. It may be that you happen to have never observed smoke without an antecedent ass, or an ass without smoke following. Even this is of no avail. It is not agreement (unbroken and uniform though it be) in presence or in absence, or in both, that can settle the matter. There is one and only one way of ascertaining the causal relation. Suppose A with certain accompaniments is found to precede B immediately. Now, if A disappearing, B disappears, even though all other antecedents remain and there is no other change in the case, then and then only can the causal relation be ascertained. But this does not establish the unconditionality of the concomitance which is essential to a Vyapti. We have, therefore, to examine the cases carefully to see if there is any determining condition (Upadhi, i.e., some hidden or undetected but really operative

([5]) Introduction to Science—Thompson, pages 58–61 (Home University Library).
([6]) Seal—The Positive Sciences of the Hindus (1915 edition), page 250.

or indispensable accompaniment) which conditions the relation between the supposed sign or mark (Gamaka) and the supposed signate (thing signified, Gamya) . . . . . Every one of the accompanying circumstances (of course the likely ones) may be taken successively, and it may be shown that the concomitance continues even when the suspected Upadhi (Shankitopadhi) is absent, and therefore it cannot be the Upadhi. And this is to be fortified by the observation of uniform and uninterrupted agreement in absence (Vyatireka) between the two concomitant phenomena. In this way, when we have disproved all suspected Upadhis, we conclude by establishing the Vyapti. It is true that we may still go on doubting; but doubt has a certain limit for the 'experimenter' and the thinking person (Pareekshaka, Prekshavan). When doubt overthrows the foundation of all rational practice or leads to a stoppage or arrest of all practical activity, it stands *ipso facto* condemned, and must be abandoned. Thus it is that Vyapti is ascertained. In this way we observe innumerable instances of Vyapti. Now, by means of repeated observations of this kind (Bhuyo Darshana) we have established the principle of the Uniformity of Nature (Svabhava-pratibandha) and also of causality (Karyakaranabhava); and these two principles thus ascertained may be made use of in their turn as the basis of an argumentation or deduction (Tarka, Uha) to confirm a particular Vyapti in a particular case. Tarka or Uha, then, is the verification and vindication of particular inductions by the application of the general principles of Uniformity of Nature and of Causality, principles which are themselves based on repeated observation and the ascertainment of innumerable particular inductions of uniformity or causality. Thus Tarka also helps in dispelling doubt." (7) Students of Western scientific methods cannot fail to notice the close resemblance between the above methods and those designated by Mill as 'The Joint Method' and 'The Method of Residues'; if, further, we consider also Mill's 'Methods of Concomitant Variations' and compare the Western Method with what the Hindus call the 'Panchakarani,' the resemblances become even more striking; the Panchakarani is illustrated thus:—"The following changes being observed, everything else remaining constant, the relation of cause and effect is rigorously established. First step—the 'cause' and the 'effect' phenomena are both unperceived. Second step—then the 'cause' phenomenon is perceived. Third step—then, in immediate succession, the 'effect' phenomenon is perceived. Fourth step—then the 'cause' phenomenon is sublated or disappears. Fifth step—then, in immediate succession, the 'effect' phenomenon disappears. Throughout, of course, it is assumed that the other circumstances remain the same (at least the relevant or material circumstances)." (8) [The Western student of Medicine cannot fail to be struck with the analogy between the above chain of reasoning and that underlying the famous Koch's postulates; so too, the student of the Physical Sciences cannot fail to notice its general resemblance to the Baconian Inductive principle that, if things are, in experience, found to be present, absent or varying together, they are, in all probability, causally connected; only, what the one following Mill, would call 'the Law of Agreement, difference and concomitant variation,' the other would call the Panchakarani, because the conclusion is reached by Pancha (or five) steps.] "This Panchakarani, the Joint Method of difference, has some advantages over J. S. Mill's method of difference, or what is identical therewith, the earlier Buddhist Method; and the form of the canon, bringing out in prominent relief the unconditionality and the immediateness of the antecedence, is as superior from a theoretical point of view to J. S. Mill's canon, and is as much more consonant than the latter, to the practice of every experimenter, as the Hindu analysis of Anumana as a Formal-Material Deductive-Inductive inference is more comprehensive and more scientific than Aristotle's or Mill's Analysis of the Syllogism (or mediate inference); for the Hindu inference (Anumana) is neither merely formal nor merely material, but a combined Formal-Material Deductive-Inductive process. It is neither the Aristotelian Syllogism (Formal-Deductive process), nor Mill's Induction (Material-Inductive process), but the real inference which must combine formal validity with material truth, inductive generalization with deductive particularization." (9) Such then is the Hindu scientific method. If one pursues the comparative study of the two methods with sympathy,

(7) The Positive Sciences of the Hindus (1915 edition)—B.N. Seal, pages 256–57, 276–77.
(8) Ibid pages 258–59.
(9) Ibid pages 259, 250 and 25.

understanding and, above all, without bias, one may well re-echo Lord Haldane who in the course of an address delivered on 3rd July 1921 at the Indian Students' Hostel, London, is reported to have said: "I suspect that if we studied the philosophical systems of the East with as much intelligence as we do those of the West, we should find that they differed very much less than we think and had a common foundation which would give identity of outlook of great value." Yes, it is for such common foundation and such identity of outlook that I venture to plead in this memorandum; for, so far as my study of the subject goes, I see much of common ground between the two systems of scientific methodology; the Hindu method of Pratyaksha (or direct perception) has its analogue in the observational method of our Western brethren; so too, as has been discussed before, the method of Anumana has its analogue in the Western methods of Logical Inferential Reasoning of the Nature of Analogy, Deduction and Induction (Baconian Method). He who goes through the works of the master-minds among both Eastern and Western scientists finds that there is a striking resemblance in their intellectual attitude towards problems that presented themselves before them; it is an attitude characterized by accurate observation (Darshana and Bhuyodarshana), precise description, correct classification, patient experimentation (Pareeksha), rigid reasoning (Yukti Yuktam), careful verification (Nirnaya), institution, where necessary, of crucial tests (Vinigamaka), and, above all, that supreme faculty of analytico-synthetical imagination (Buddhi) that can see the one connecting law running through the whole range of a mass of apparently unconnected phenomena and enable the Newtons of all times to take their gigantic leaps 'from the falling apple to the falling moon.' "An isolated fact," says Henri Poincare, "can be observed by all eyes—by those of the ordinary person as well as of the wise. But it is the true physicist alone who may see the bond which unites several facts among which the relationship is made, though obscure. The story of Newton's apple is probably not true. But it is symbolical. So, let us think of it as true. Well, we must believe that many before Newton had seen apples fall, but they made no deduction. Facts are sterile until there are minds capable of choosing between them and discerning those which conceal something and recognizing that which is concealed—minds which, under the bare fact, see the 'soul' of the fact." Now the methods by which thinkers, both in the East and in the West, have tried to see, 'under the bare fact, the soul of the fact' are fundamentally similar, although one calls it by the name of Anumana, while the other labels it as the method of Deduction and Induction (Baconian); that is only a difference in name—not in essence.

THE LIMITATIONS OF ALL SCIENTIFIC METHODS.

7. Then again there is fundamental agreement as regards the essential limitations of these scientific methods; both agree that Prathyaksha (or direct observations and appearances) frequently deceive us. The use of such a term like the 'ultra-microscopic,' for example, must remind us that the range of our senses is distinctly limited, even when aided by instruments of marvellous power and precision. We have 'light' whose brightness is too high for the range of perception of our eye. So in the midst of the most intense 'light' we may be in utter darkness. We have 'sounds' whose vibrations are beyond the range of perception of our ear; and so, in the midst of the most powerful 'sounds' we may be stone-deaf. If the ancients said that the senses are the 'slayers of the real,' Einstein now says, that 'the appearance of matter, as we see it, is not real, but false, distorted or warped and we are told that illusion is the very essence of our intellectual apprehension.' (10) Then again apart from errors due to inefficiency of the senses, aided or unaided, there are errors due to the personal equation of the observers—errors of mal-observation, non-observation, bias, hallucination and the like. It is therefore a well-recognized fact, both in the East and the West, that, for the ascertainment of truth, direct perception does not take us very far. Hence, people have everywhere turned to experimental and hypothetical methods of logical inferential reasoning, with a view to add to, or correct the knowledge gained by, direct perception. Thus, the sense-impressions regarding the fixity of the earth and the movement of the sun round it are corrected by an elaborate process of reasoning which leads to the conclusion that it is really the sun that is relatively fixed and the earth that moves round it; so too, the very familiar optical

(10) Problem of Truth (Wildon Carr), page 7.

illusions of our every-day life, such as the apparent increase in the size of the sun and the moon when at the horizon than when at the zenith, the apparent rising and setting of the stars, and such other phenomena, are other instances of how the senses deceive us, and how often things are not really what they seem. Both are also agreed that all the three scientific methods so far discussed, viz., Analogy, Induction and Deduction are themselves not free from possible errors. The method of analogy that has done so much to illumine many dark abysses, specially in Geology and Biology, may be vitiated by some vital differences between the two sets of conditions compared. "Logical inferential reasoning, in both its aspects (induction and deduction) can never get rid of doubt as to the absolute truth and soundness of its conclusions, as Mr. (now Lord) Balfour has so conclusively shown in his Defence of Philosophical Doubt. Deduction depends on the validity of its premises, axioms, and postulates, and on the perfect subtleness and strength of the reasoning powers. Induction, unless we have an infinite number of facts and an infinite mental capacity to comprehend all such facts, cannot also give us the exact truth.

"An inductive conclusion, though based on a million instances, becomes wrong if one single instance to the contrary is clearly proved to exist, and a higher law which would explain and include the single contrary instance also has to be searched for." (11)

It is essential that these limitations of the scientific method must be specially emphasized, as extravagant expectations still continue to be entertained regarding its possible achievements; and that, not only by the public at large, but, as has been well pointed out by Prof. Schiller, by professed logicians also. "The public still believes" he says, "that mathematical demonstration is the *ne plus ultra* of cogency, though modern mathematicians are under no such illusion. They understand that it has only the hypothetical certainty of a coherent system of assumptions and the practical value of a well-chosen one" (12). Different minds are differently constituted, some being influenced more by the first of these two considerations, while others are more influenced by the second. To some people—the Pragmatists, for example—the most satisfactory testimony for truth is not so much its logical consistency, as its utility and practical application to reality. 'Truth is what works' is their great manthram. To some minds, however, the most satisfactory testimony for truth is its logical consistency; they accept that proposition as the best, which, to them, has the logical certainty of a coherent system of assumptions. This will perhaps explain in some measure why, ever since the dawn of history, there have been sects in medicine as in every other science and there have been bitter quarrels among them. "The quarrels of doctors" says Osler, "make a pretty chapter in the history of medicine. Each generation seems to have had its own. The Coans and the Cnidians, the Arabians and the Galenists, the Brunonians and Broussonians, the Homeopaths and the Regulars, have in different centuries rent the robe of Æsculapius." Can we not do better than add one more quarrel to this dismal list? Wherever knowledge is imperfect, as it undoubtedly is in medicine, differences of views are inevitable. But they need not result in unworthy disputations among those whose one common aim is the eternal quest of truth. It is true that the essential limitations of the scientific method which we have discussed above have led Hindu thinkers to postulate the authority of the scriptures or the words of the Vedic Seers as the most competent testimony that it is possible to have; the chain of reasoning by which this conclusion is arrived at will be considered later and need not now detain us here; for, our immediate concern is to find out points where we agree, and not where we differ; and we have seen that, on almost all vital points, the agreements are numerous enough for us to re-echo Lord Haldane's statement, already referred to, that 'they (the systems of the East and the West) differed very much less than we think and had a common foundation which would give identity of outlook of great value.' We have seen how strong the resemblances are between the modern Western scientific methods based on Baconian Induction and Deduction, and the ancient Hindu methods of Pratyaksha and Anumana, such as Vyaptigraha and Panchakarani; we have also seen that both agree in their recognition of the essential limitations of the scientific method, and in thinking that, not only the senses and

(11) Evidences of Truth—Sir T. Sadasiva Ayyar, pages 2–3.
(12) Psychic Research Quarterly, Volume I, page 9.

the intellect may deceive us, but that even reasoning may lead us astray; for, given a sufficiently robust will-to-believe, one can always find reasons to continue to believe what he wants to believe, unaffected by any reasoning; faced thus with the problem of judging and choosing rightly, among a number of contending alternatives or hypotheses, both have come to very nearly the same conclusion and it is this:—There is no finality either about our premises or our conclusions; all that we can do is to test each hypothesis with the greatest possible care and accept that which explains best and works best, or explains better or works better, than any other. Hence it is that, both in the East and in the West, the tests of a valid hypothesis are extremely rigid and stringent. To illustrate my point, I cannot perhaps do better than compare the various tests of a valid hypothesis as laid down by both Western and Eastern Scientists.

TESTS OF A VALID HYPOTHESIS ACCORDING TO WESTERN AND HINDU SCIENTISTS.

8. The tests are as under:—" A good hypothesis must allow of the application of deductive reasoning and the inference of consequences capable of comparison with the results of observation."

" A good hypothesis must not conflict with any laws of nature which we hold to be true."

" In a good hypothesis, the consequences inferred must agree with the facts of observation."

" It often happens that two (or even more) hypotheses have been put forward in possible explanation of phenomena, and owing, perhaps, to both agreeing with a large number of experimental facts, it may be exceedingly difficult to choose between them. Obviously, both cannot be correct; both may be wrong; one must be wrong. How are we to decide? We require a new experiment which shall give results agreeing with one hypothesis, but not with the other. Such an experiment which decides between two rival hypotheses is called an *Experimentum Crucis.* A crucial experiment confirms one hypothesis, but rejects the other". [Scientific Method (1919 edition): Professor Westaway, pages 245–246.] Compare the close agreement between this and the tests of a legitimate hypothesis (Kalpana) as laid down by Hindu Scientists:—" A legitimate hypothesis must satisfy the following conditions:—(1) the hypothesis must explain the fatcs; (2) the hypothesis must not be in conflict with any observed facts or established generalizations (Jayanta, Jyayamanjari, Ahnika 1); (3) no unobserved agent must be assumed where it is possible to explain the facts satisfactorily by observed agencies (Ibid.); (4) when two rival hypotheses are in the field, a crucial fact or test (Vinigamaka, ratio sufficiens) is necessary; the absence of such a test is fatal to the establishment of either; (5) of two rival hypotheses, the simpler, i.e., that which assumes less, is to be preferred, *ceteris paribus* (Kalpanalaghava *versus* Kalpanagowrava); (6) of two rival hypotheses, that which is immediate or relevant to the subject-matter is to be preferred to that which is alien or remote; (7) a hypothesis that satisfies the above conditions must be capable of verification (Nirnaya) before it can be established as a theory " ([13]).

METHODS OF AYURVEDA, STRICTLY SCIENTIFIC.

9. It is as a result of such comparative study as I have attempted to indicate above, that I find myself in a position to give my whole-hearted assent to the opinion of that erudite scholar, Brajendranath Seal, who, in his monumental work " The Positive Sciences of the Ancient Hindus " expresses himself thus, in respect of the question under discussion:—" What is characteristic of the Hindu scientific mind is that, without being content with the general concepts of Science and a general methodology, it elaborated the fundamental categories and concepts of such of the special sciences as it cultivated with assiduity, and systematically adapted the general principles of scientific method to the requirements of the subject-matter in each case. The most signal example of applied logic (or scientific method) worked out with systematic carefulness is the Logic of Therapeutics in Charaka, a Logic, which adapts the general concepts of cause, effect, energy, operation, etc., and the general methodology of science to the special problems presented in the study of diseases, their causes, symptoms and remedies."

([13]) B. N. Seal—Positive Sciences of the Hindus, page 288.

The Authority of Scriptures.

10. It is, however, sometimes objected that "though the ancient system reached the height of a systematizing, theorizing school of thought, it lacked the freedom of individual action, essential to the pursuit of real science, and its evolution was prematurely arrested by an unscientific veneration for petrified dogmas" ([14]). No one who has not entered into the very soul of Hindu thought can appreciate what scriptural authority really means to the Hindu, and how two persons, paying the profoundest possible veneration to the same scriptural texts can yet interpret them in ways as diverse as the poles; a classical example that readily occurs to my mind is how all schools of Vedanta—from uncompromising duality (Dwaita) to absolute non-duality (Adwaita) purport to be based on the same Vedic texts; the fact of the matter seems to me to be that, alike in Hindu Science, Philosophy and Religion, the amount of freedom of individual action and thought was practically unrestricted, in spite of the theoretical finality of scriptural 'authority'; true, the Vedas, were venerated by all as of paramount authority; but, they denoted more the eternal wisdom behind the texts, than the spoken or written texts themselves, which were but the symbols for conveying that wisdom to human minds; hence, the nature and extent of the knowledge conveyed by the texts to any individual, depended upon the receptive capacity of the individual himself, just as, by one and the same piece of poetry or music, one individual may be sent to profound sleep, and another to ecstatic rapture. So it was that the same Vedic texts conveyed different philosophical messages to different types of individual minds; in some, the chord of Samkhya was struck, in others, that of Yoga, and in yet others, that of Vedanta, and so on. So too in Religion the same texts serve as the one common Gospel of those diverse religious faiths that are all included in that one all-embracing Religion known as Hinduism; Science too is no exception to this rule; here, as elsewhere, that same symbol of Eternal Truth, variously called the Vedas, the Agamas, etc., is laid down as the final court of appeal; the atomic theory of the Visheshika may differ from that of the Vedantin; but, each is an attempt—and a perfectly legitimate attempt—to interpret Truth exactly as each sees it; and who knows that all apparently different views are not merely so many differet aspects, each true from its own angle of vision, and each contributing its own complement to the composite picture of Reality, much as certain microscopic individuals confined to the region of one or other of the spectral rays refracted by a prism may truly describe the parent ray, as each sees it, as red, blue, yellow, etc., while Reality is all this and much more? However this may be, Vedas, to the Hindu, means the Eternal Truth; and loyalty to the Vedas no more restricts the freedom of action and thought of the Hindu thinkers than loyalty to Truth restricts the similar freedom of others. Whenever a thinker feels that the interpretation given by another to Vedic text is not correct or is opposed to experience, he does not in the least hesitate to say so; as a matter of fact, with some thinkers, such opportunities of demolishing another's view are never lost; and the demolition is done with such an obvious relish and piquant zest as to make it appear as though this was a pleasant pastime, loved for its own sake. Of course, no orthodox pundit would admit that the Vedas could be in error, any more than any one else could admit that truth was in error; all that he claimed to do was that previous commentaries and interpretations of the texts were wrong and that his commentary was more in conformity with the truth of the texts than any other; in other words, differences of views were expressed through commentaries of the texts and not by altering the texts themselves. Considering how easy it was for every dissentient voice to quote scriptures in its support, it does not appear to me that the tacit recognition of the scriptures as the Eternal Truth has hampered the freedom of action and thought, among Hindu thinkers; to them, 'the authority of Scriptures' holds, more or less the same position as 'Truth' to others; when the latter differ among themselves, they do so in the name of that one and the same 'Truth' the quest of which is the common goal of all; the case is very similar with Hindu thinkers; when they differ, as they frequently do, all appeal to, and speak in the name of, one and the same supreme authority, viz., 'Scriptural knowledge' which, to them, is the same as Eternal

([14]) Report of the Calcutta University Commission—Vol. V, pages 57–58.

Truth. The differences arise because Hindu thinkers differ in their interpretation of 'Scriptural knowledge' just as much as, or even more than, Western thinkers, in their interpretation of 'Truth' or 'Reality'.

Considered in this light, it is easy to see that what the Hindus call "Shabda Pramanam" is worlds apart from any blind "Veneration for petrified dogmas." Veneration, undoubtedly there is, and in abundance; but, it is for the *words of Apthas* or Masters of Wisdom and not for the dogmas of others—much the same sort of veneration that a tyro in Physics cannot help showing to the authority of such masters as a Bose or a Thomson. The previous records of these master-minds in contacting and sensing Truth are so rich and ours so poor, that we willingly accept their guidance; and it is well that we do so; it is well that reverence for wisdom should ever dwell in us, and grow from more to more, as more and more of knowledge is vouchsafed to us. It seems to me that the strong objections which Western Scientists have held against the Hindu Shabda Praman is due to its being the subject of a very unfortunate mistranslation as 'authority'. Now, the word 'authority' to Western minds is an anathema; to them, it is reminiscent of that dark period when 'authority' would accuse even a Pope of having commerce with the devil if he ventured to use a novel instrument like the compass. In their minds, 'authority' conjures up visions of those days when the sterilizing torch of 'authority' sought to burn away the tender seed of Science which Galileo planted at the risk of his life; and naturally enough, when they talk of 'authority,' it is as though it were in eternal conflict with what we call 'Reason'. The sort of 'authority' that is depicted here is poles apart from the sort of 'authority' which the Hindu Shabda Praman denotes. Nowhere perhaps is the tyranny of mistranslations more in evidence than in such cases where a word denoting a willing acquiescence in the authority of the words of those experts who are masters of knowledge and wisdom, is construed to mean an unmeaning 'veneration for petrified dogmas.' Here in India, notwithstanding the homage universally paid to 'scriptural authority,' differences of views have widely prevailed and been freely discussed; nobody ever thought that if the great Shankaracharya disagreed, as he did, with the view of Evolution as propounded by the sage Kanada, he, thereby, set at naught the Shabda Pramanam; nor did it prevent the Acharyas Shree Ramanuja or Shree Madhwa from propounding their doctrines of Vishistadwaitam (qualified non-duality) and Dwaitam (duality), as against the view of Shree Shankaracharya himself. Indeed, I do not know if there is any other people in the world among whom freedom of thought has been more tolerated, fostered and respected than among the Hindus; we are told that in the great ancient Indian University of Benares, the very home, if there was one, of orthodox theism, students and teachers alike, were at perfect liberty to discuss and propound, as indeed they sometimes did, even atheistic doctrines like those of the Charvakas; even in comparatively recent times as that of the great Advaitin Madhawacharya, we find that in his discussion of the sixteen religio-philosophical faiths of his time, Charvaka Darshana (Atheism) has a chapter devoted solely to it, equally with Buddhism, Jainism, and his own philosophy of Adwaitism. Here, in India, the binding force of Shabda Praman or 'authority' is all from within; none else compels. Here is no 'blind' veneration forced from without, but merely a willing recognition of the inevitable fact that where we are dealing in the domain of experts, those who are not 'experts' have perforce to recognise the authority of those who are. Here is no conflict of 'reason' and 'authority', although some people have needlessly distressed themselves over such a bogey. It is not that the 'experts' have arrived at their conclusions, without adducing reasons for the same; for, reason is there and always; but it is too recondite to be understood by non-experts. For instance, how many of us can understand the chain of reasoning adduced by Einstein to build up his Theory of Relativity? Any expert Physicist can accept it or reject it, and state his reasons for doing so; but I can only accept the 'authority' of either Einstein or his opponent, till I become myself an expert capable of reasoning on these topics; but, even here, I have to use my reason for accepting one or other of these experts as my 'authority'; and what guarantee is there that my reasoning is always right reasoning? I may have confounded my prejudice for 'Reason' and accepted the 'Authority' of that expert to whom I had some partially but who was really in the wrong. If only we recognize that 'authority' does not always mean 'perfect authority' just as 'reasoning' cannot always be equated to 'right reasoning' there will be no

difficulty in understanding the role played by Shabda Pramanam (or the authority of the words of the wise) in Hindu Scientific and Philosophic thought; all that it says is that, in the region of expert knowledge, those who are novices have to accept the 'authority' of those who are experts; while this undoubtedly acts as a wholesome and conservative check against ignorant and upstart tyros flooding the world with their immature views, it, in no way, restricts the growth of independent thought, nor does it prevent experts from differing from one another, if they find cause to do so; as a matter of fact, the course of Hindu thought abounds in numerous instances of 'authority' differing from 'authority.' In both *Charaka* and Sushruta, the two classical works of Ayurveda there are many examples of such differences of views, propounded with rare acumen and felicity of expression, and discussed in thoroughly scientific style; and Ayurveda, having long ago reached, as the Calcutta University Commissioners truly observe, "the height of a systematising and theorising school of thought" still holds a unique position as a system of strictly logical and scientific thinking. That its evolution, more especially on the practical side, "was prematurely arrested", is no doubt true; but, to attribute it to "an unscientific veneration for petrified dogmas" is, in my humble opinion, to reverse the role of cause and effect; "unscientific veneration for petrified dogmas" has undoubtedly existed among some later day Pundits; but, that is the *result, not the cause*, of arrested evolution and progress which has, in the recent past, overtaken not only Ayurveda but ancient Indian thought generally; when decay of learning sets in, the great masters capable of scientifically expounding their doctrines become few and far between; and followers, imbued with more reverence for their masters than learning in their teachings are apt to make dogmas out of the doctrines propounded by their masters. For causes however—political and other—of this general decay of Indian Learning and Arts, we must look deep into the records of history; and this will be done later in its proper place.

"Ayurveda 'mixes up' Science, Philosophy and Religion."

11. Another objection which critics raise against Ayurveda is something to this effect; the sources of Ayurveda are scattered among such works of Philosophy as the Nyaya and Samkhya Darshanas, and such works of Religion as the Vedas, Puranas and Itihasas; this mixing up of Science with Philosophy and Religion in unscientific. Now, this charge is quite true; in Ayurveda, as in Hindu thought generally, these several branches of study are ever associated with one another; but, when we go to the root of the matter, is it really possible to isolate and shut them off in water-tight compartments? Has not the Hindu view found its supporters among some of the foremost of Western Scientists themselves? Karl Pearson is a name to conjure with, in the field of modern Western Science; yet, we find him expressing himself thus:—"the scope of science is to ascertain the truth in every possible branch of knowledge; there is no sphere of inquiry which lies outside the legitimate filed of Science. *To draw a distinction between Science and Philosophy is obscurantism* (15)." Strong language this; but none too strong, considering the fact that the notion of confining Science, Philosophy and Religion in isolated, water-tight compartments is still the fashion of the day. I quote Karl Pearson merely to show that the idea of viewing Science, Philosophy and Religion—in fact all branches of knowledge—as one connected whole instead of as so many dissociated entities is not altogether foreign to Western thought. In Ayurveda, however, as in Indian thought generally, such a notion is almost an axiomatic proposition accepted by everybody as a matter of course; if we are to understand Ayurveda as Ayurvedists know it, (and such an understanding is necessary for every would-be critic), we must equip ourselves at least with a general idea of their fundamental conceptions such as the one we are now considering.

Some critics have, however, thought it right to pass judgments on the indigenous systems, without apparently taking any or sufficient trouble to acquaint themselves with even their general principles; and we cannot help feeling acutely distressed when, among such critics, we find persons, who have worshipped for years at the temple of Science. He who would criticise Western Medicine is expected to acquaint himself, at least with the general principles of that system, before he ventures to take on the role of a critic. Why should it be different when the system to be judged is Ayurveda? And if I now linger for some time longer, in discussing a

(15) Grammar of Science, third edition, Volume I, page 37.

conception so fundamental to Ayurveda and to Indian thought generally, it is because I consider it my duty as a critic to understand first the view-point of the Ayurvedist before I dare judge him.

Coming back from this little digression, I stated that the notion of the intimate association of Philosophy, Religion and Science is almost an axiomatic proposition in Hindu thought and meets us at every turn; to understand this position, we must first realize that, to the Hindu, 'Philosophy' was not a matter for mere speculation or intellectual edification; from his standpoint, no subject of inquiry was worthy of study, unless it helped the student to so regulate his life as to lead him to that state of perfection called Moksha. The modern Western conception of Philosophy as a pure speculative, theoretical study dissociated, as it were, from the actual problems of life had no place in his scheme of life; his justification of philosophy was not merely its excellence as a theory or speculation, but its intense practical value in regulating one's daily life; in other words, the great value to him of philosophy was that it served as the basis of certain ethical rules and physical practices, broadly included under the term 'Religion,' although modern Westerners would label some portions of it as 'Ethics' and others as 'Science.' It may perhaps be better, if I illustrated this point by an example; in that well-known work, Sarva Darshana Sangraha, written by the learned Adwaitin Madhawacharya, there is a discussion of the tenets of some sixteen religio-philosophical faiths of India, each discussion occupying a chapter; here one finds that, along with Buddhism, Jainism, Dwaitism, Adwaitism, Vishistadwaitism, etc., there is specific mention of Raseshvara Darshanam (Chemistry) discussed in a chapter all by itself. To the modern Westerner, this is mixing up Science with Philosophy and Religion; but, see what it means to the Hindu; he argues thus: the one supreme object of Life (or Purushartham) is to attain that state of Perfection known as Self-Realization or Mukti, thus freeing oneself from the wheel of births and deaths; now, the study of chemistry helps me to achieve this object, by intelligently using mercury and other chemicals in the healthy regulation of my physical and other bodies; here we see at once how the philosophy (if we may say so) of Chemistry is indissolubly associated with the Science of Chemistry, and with certain ethical and physical practices, broadly included under the name of 'Religion'—the 'Religion', if you please, of Chemistry (Raseshavara Darshana). As in Chemistry, so it is in Mathematics, Grammar, Exegetics, Ayurveda or any other branch of study; the philosophical aspect of every one of these is intimately and indissolubly associated with the appropriate Scientific and Religious aspects; take for example, a system like the Yoga of Patanjali; it has (or rather is) a philosophy based on that of the Samkhya, but with the addition of the conception of Ishwara; it is also a Religious discipline, teaching the aspirant to achieve Self-Realization through the eight-fold method of Yoga, which includes the due observance of certain ethical rules and physical practices; then again, it is also a Science—pre-eminently, the science of psychology, because its religious discipline is largely concerned with the control of the modifications of the mind. Thus it is that every system of Indian thought is not merely a philosophy to be intellectually appreciated, not merely a science for explaining the facts of experience but is also a Religion to be lived and not merely believed—so direct and immediate is its bearing on the life that is to be lived and the discipline that is to be practised; in other words, every system of Hindu thought is at once Philosophy, Science and Religion, all in one and one in all. Considered in this light, it may not be so difficult to understand why Ayurveda draws so freely from Samkhya and other Darshanas, which the Westerners classify as 'the Philosophies,' as also from Tantras and other works, which they would designate as distinctly 'Religious' treatises. It may perhaps be better if I illustrated the need and the validity of such borrowings by a reference to the similar borrowings of modern Western Medicine.

Scientific validity of the hypotheses of the Darshanas.

12. We are all aware that in the curriculum of studies of modern Western Medicine, there is always a provision made for what is sometimes known as 'preliminary scientific study'; a working knowledge of the Laws of Physics, Chemistry and the like is demanded of every student who applies for training in Western Medicine; this preliminary study serves at least a two-fold purpose; firstly, it is calculated to give him a training in scientific method and to engender in him that particular intellectual attitude known as 'the scientific frame of mind'; secondly, it will help

the student in understanding many things in medicine, the reasoning of which it would be difficult for him to follow without such preliminary study; for, text-books and teachers of medicine tacitly assume and apply many of the Laws of Physics, Chemistry, etc., without attempting to prove them; hence a preliminary working-knowledge of the Laws of Physics, Chemistry, Biology and the like is laid down as essential for every student of modern Western Medicine. Exactly similar is the position held by the Nyaya, the Visheshika, the Samkhya and other Darshanas, in respect of Ayurveda. If Western Medicine finds it necessary to assume tacitly the theories propounded by our Physicists regarding, say, the constitution of the atom and the molecule, Ayurveda finds it equally necessary to assume the formulæ governing the evolution of the atom as laid down by, say, the Samkhya. The assumption in either case is quite legitimate and scientific. I am aware that it is sometimes argued that if the claim of Ayurveda to be a science is to be admitted, it must cease to talk in terms of Nyaya, Samkhya and the like; scientific orthodoxy could go no further; it is as if the Ayurvedists said that if Western Medicine is to be reckoned as a Science it must cease to talk in terms of those 'narrow' conceptions (narrow from their standpoint) which Modern Physics, Chemistry, etc., propound; this attitude is just as unscientific as the other. In so imperfect a science like Medicine, where so many theories have had their little day and ceased to be and are soon replaced by others yet newer, or may be, older ones in a newer garb, who shall say this alone is true, and that other is false? Let us, for one moment, transport ourselves in thought to the days when we were many years younger, say, to the days when the Daltonian notion of the indivisible chemical atom prevailed among Western Scientists. Let us also imagine that a Hindu Samkhya or Visheshika Philosopher, working side by side with us, told us that the chemical atom, far from being indivisible, was really very much divisible, enclosing within itself systems within systems and took us through the whole range of his evolutionary chain, from the Trasarenu to Dvanukas, Arambhaka Paramanu, the Bhutas and so on, back and back, to Tanmatras, Bhutadi and Mula-Prakriti. What should be our attitude, as students of Science, to our Hindu Samkhya Scientist? Shall we say to him that our scientific speculation holds that an atom is indivisible and therefore his speculation, which holds to the contrary, has no claim to be called 'scientific' at all? or shall we rather say "It may be so; but, at present, I see no cause to change my view and prefer to work with my own speculation; if you prefer yours, so be it. Where knowledge is so imperfect, proof is difficult and denial is folly." If we had taken the first attitude, which to my mind is quite unscientific, we should have now to eat our own words and agree that our once indivisible atom is now divisible; if we had taken the second, we could accommodate ourselves to the present view with perfect grace; this is the attitude which, I submit, ought to characterize the truly scientific man; I therefore hold that it is quite as scientific for the Ayurvedists to assume the truths of Samkhya, Visheshika and the like, as it is for the student of Western Medicine to assume the truths of modern Physics, Chemistry and the like. If only our early European oriental scholars, to whose immense labours in the field of Sanskrit research we owe debt which perhaps we can never repay, had not labelled our 'Shad-Darshanas' as the six schools of 'Philosophy' but explained and popularized the notion that with the Hindus all knowledge was one and indivisible, that facts of Science, Philosophy and Religion could not be cribbed, cabined and confined in separate water-tight compartments and that therefore the province of their 'philosophies' was wide enough to include science, religion and all else, that is the subject or object of knowledge, then perhaps due attention would have been paid by our Western Scientists to those portions at least of these 'Philosophies' which deal with 'Science', and the world at large would have been made familiar much earlier with certain notions of Physical and Psychological Sciences which have now burst upon them almost with revolutionary suddenness—such notions, for example, as the conception of an atom as a highly complex 'system within a system' and the existence of dream-state (now fairly well recognized in the West) and other higher states of consciousness (not yet recognized by Western Scientists). It is of course arguable that these notions were merely the happy speculations of a highly imaginative race; it may be so; but, where such speculations have the knack of forestalling the most recent discoveries, it is, I submit, worth our while to treat these speculations with becoming respect and regard them, at least, on the footing of

provisional or tentative hypotheses. To be accepted as proven theories, much more of course, will have to be done. The conclusion must be shown to proceed strictly logically from the premises assumed, to *explain* satisfactorily the several facts of experience to which they relate, and to *work true*, when it is practically tested by experiments, or its predictions are put to the test of verification. So long as Ayurvedists are agreeable to work along these lines they are at perfect liberty to make their own assumptions and advance their own hypotheses; and it is not for others to lay down arbitrarily 'thus far and no further'; it is as unscientific for the Western Scientist to say that his Hindu brother should not assume such and such a premise, as it would be for the Hindu Scientist to say that his Western brother should; and this proposition remains fundamentally true even though it is proved later on that, as a matter of fact, the particular assumption and the particular conclusion based thereon were wrong wholly or in part; for, as I have stated more than once, a proposition is admitted to be scientific, not because there is any finality about its conclusions but because such conclusions are reached by the use of the scientific method; if that were not so, the writings of even the great Newton and Darwin would have to be classified as 'unscientific' because a later generation found that their views on 'Light-propagation' and the 'Origin of Species' respectively had to be challenged or modified. The fact of the matter seems to be that in no science is it possible to do away with assumptions altogether; any attempt to do that would mean the proving of every proposition that is advanced, assuming nothing, or taking nothing for granted; and this would inevitably mean that every inquiry would ultimately work back and back to the dead wall of first or final causes and stop there, being unable to go any further. Hence it will not do for us to go on asking at every step the futile question, 'But, how do I know that the premises are correct?'. The inquiry is quite legitimate in its proper time and turn; but should not be made prematurely. Even a so-called exact science like Geometry cannot afford to be without its premises—its axioms and postulates, which are not proved but 'given' or taken for granted; not only so, we should also be prepared to be satisfied with premises which are only approximately or partially true. Let us take some examples from an 'exact' science like Geometry. If the postulates and axioms of Euclidean Geometry worked true in all cases, we should have three angles of a triangle always equal to two right angles; but, as a matter of stern fact, Clifford found that in the case of great triangles, there may be a difference of as much as 10°. Similarly, if, in Euclidean Geometry, it is taken as an axiom which requires no proof that two parallel straight lines could never meet, Gaussian Geometry would actually prove to you that they do, if produced sufficiently far; so too, if Euclidean Geometry meticulously deals with straight lines and plane surfaces, Reimann's Geometry would teach us that there can really be no straight lines or flat surfaces in nature, whatever appearances and Euclidean Geometry may say to the contrary; but do we, for these reasons, consider Euclidean Geometry unscientific or decline to make use of it for all that it is worth? No, most assuredly no, unless we are so unwise as to deny ourselves a useful avenue of knowledge. Let us keep these facts well in our minds when we deal with Ayurveda; let us remember that no science can afford to do away with premises altogether—not even with such as are known to be true only partially and not wholly; let us therefore be wiser than setting up any unscientific limits to the perfectly scientific right of Ayurveda to advance any premises it wants to. Unquestionably, it is our right as it is our duty to examine the validity of the premises later on, as also to see how far their conclusions follow strictly logically from their premises, how far their theories offer satisfactory explanations for the diverse phenomena of health and ill-health, and how far the practices based on those theories work satisfactorily when applied to problems of preventing and curing diseases. All these inquiries are perfectly legitimate in their proper time and order; meanwhile, let us accept the premises tentatively and pass on to study the general principles of Ayurveda as Ayurvedists know it.

CHAPTER III.—PRELIMINARY SCIENTIFIC STUDY IN AYURVEDA.

The need to learn the exact meaning of Technical Terms.

13. Alike in Western Medicine and Ayurveda, a preliminary knowledge of certain fundamental Laws of Physics, Chemistry, Biology, etc., is essential for a proper understanding of the science of Medicine. Hence it becomes necessary for me to preface my discussion of the subjects of Medicine proper

by a brief reference to certain physico-chemical theories which form the bases of Ayurveda. Before I do so I have to make a little digression regarding the translations of Samskrit technical terms like 'the Panchabhuta,' 'the Thridosha,' etc., whose current mistranslations are misleading even wary and well-meaning critics. Professor Westaway mentions foremost in his list of qualifications for those who wish to master the scientific method that they 'must learn to get at the *exact meaning* of words'; and among the causes of our failure in this respect, he rightly makes prominent mention of our difficulty in 'translating from one language to another,' adding incidentally that our failure to get at the exact meanings of words is responsible 'for nine-tenths of the wrangling that goes on in all the Council Chambers of the country.' If Indian Sciences and Philosophies are to be understood aright, it is necessary for us to realize this difficulty of translating from one language to another, and to learn to associate with Samskrit terms the exact connotations associated with them by Samskritist professors of those subjects. If people know no better than to translate the Thridoshas, Vata, Pittha and Kapha as 'the three humours—Wind, Bile and Phlegm,' and the Panchabhutas Prithivi, Ap, Thejas, Vayu and Akasha, as 'the five *elements*, Earth, Water, Fire, Air and Sky,' it is better for their own reputation and for the cause of Science that they dare to be silent. It is quite true that we owe the origin of these unfortunate translations to our early European oriental scholars, to whose painstaking labours in every branch of oriental learning no praise is too high; they, then, worked under very severe handicaps from which we are now fortunately free; nobody that they came in contact with could probably tell them that their translations based on superficial resemblances to certain Greek notions were incorrect; there were then few scholars of Ayurveda sufficiently versed in European languages who could detect and point out the inaccuracies that had crept into their translations from Samskrit to European languages; if there were, there can be little doubt that with the perfectly open and scientific minds with which many of these distinguished scholars worked, they would have been glad and even eager to correct their inaccurate renderings. However that may be, there is *now* no excuse for failing to correct ourselves; Ayurvedic professors who could speak with authority have, for some time past, strongly protested against the continued use of such misleading mistranslations as that of rendering the Thridosha theory of Vata, Pittha and Kapha, as 'the humoural theory of Wind, Bile and Phlegm.' It is bad enough for any of us to persist in the use of these equivalents when we have been authoritatively told that the Thridosha theory is not the same as the Greek 'Humoural Theory'; it is worse still when we go a step further and condemn the Thridosha theory on the ground that it is the same as that exploded 'humoural theory'; this strongly reminds one of the trick of giving a bad name to a dog before you hang it. I cannot follow this course; the Ayurvedists have told us what their theory is *not*; I am bound to accept their statement, so long as I am myself not an expert in these matters; but, as students of Science, we can and will, certainly challenge them to tell us what their theory really is; and it is their answers to this challenge that we have a perfect right to subject to strict scientific criticism; that is certainly what I propose to do. It is not right to father on them a theory which they do not own; such a procedure is entirely out of court in any scientific inquiry. So let us accept the statement of the Ayurvedists that their Thridosha theory is *not* the same as some Greek humoural theory of 'Wind, Bile and Phlegm,' and then proceed to inquire what their theory really is; and let us also agree to use the original Samskrit terms themselves, where we cannot get suitable English equivalents. As I have stated before, if we are to understand the Indian Sciences and Philosophies aright, it is necessary for us to learn to associate with Indian technical terms the exact connotations which they have in the original; it frequently happens that no suitable English equivalent could be found for certain technical terms so that we cannot translate them except perhaps by a whole paragraph and even then, it may not be quite so satisfactory; in such cases, we use the original Samskrit terms themselves (as, for instance, in the case of such terms like Karma, Dharma and the like); and by practice, we gradually learn to associate with them their exact connotations; this method, though slow, is in the long run shorter and surer than the other method of quickly learning half truths or quarter truths through misleading mistranslations, only to unlearn them laboriously later on and relearn slowly the exact connotations which Ayurvedic professors associate with these technical terms.

The Panchabutha Theory of Matter.

14. We are aware that till not very long ago, Western Science held that every material object could be analysed back and back till we reached the atoms of some eighty and odd elementary substances; these atoms (literally uncuttable things) were so called, because they were all considered to be simple bodies incapable of further division. The modern notion however is that the atom is far from simple and indivisible, being, in fact, of so complex a structure as to resemble a solar system on a highly miniature scale, with a comparatively massive central proton-sun (constituting the nucleus of positive electric charge) surrounded at fairly respectable distances by a varying number of electron-planets (constituting the peripheral units of negative electric charge); nor does the complexity of structure end here; recent experiments have also shown that all the atoms of even one and the same chemical elements may not be of one and the same kind; in fact Dr. Aston's experiments with many of our lighter chemical elements show that each of these elements is really not one element but a mixture of different elements known as "Isotopes," that is to say, elements with the same properties but with different atomic weights.

Such then is the conception of matter according to modern Western Science; we can still conceive of the edifice of matter as being built up of some ninety "chemical elements"; but, we can no longer look upon these elements as simple elementary substances incapable of further division—no longer as some ninety kinds of bricks whereof the edifice is built; they are rather so many "brick-blocks," if we may say so, all built up of the same two kinds of bricks, viz., the proton and the electron; it is doubtless true that these proton-electron bricks have first to be massed into some ninety kinds of brick-blocks which are then used in various ways in building the edifice of matter; but, one brick-block (constituting, say, the atom of nitrogen) differs from another (constituting, say, the atom of oxygen) not in the quality of their constituent bricks, which are everywhere of the same two kinds only viz., proton and electron, but in the number and disposition of these bricks in each brick-block. In building the edifice of matter, different kinds of brick-blocks may be used, either singly or in combination for building different parts of the edifice; but however different one part may appear from another, they are all built up of the same two kinds of bricks, viz., proton and electron; and the moment we recognise this common basis of all matter, we are already on the high way to Alchemy. If, by some means, we can but shake up the arrangement of the proton-electron bricks of the brick-blocks of a base metal like lead, into the proton-electron arrangements constituting the brick-blocks of a noble metal like gold, then, verily, we have achieved alchemy which, by the way, has now become quite scientific and respectable; several stars of the first magnitude in our scientific galaxy are now hard at work in achieving the transmutation of elements and some brilliant results have been reported already, although they cannot, as yet, be reckoned as successful business propositions; but, to-morrow, even that may come to pass; and if it does, it is some consolation to know that we are not now likely to denounce the successful wizard in this line as an infamous charlatan and cheat; we are more likely to go tumbling over one another to hail him as the greatest F.R.S. of the day.

European and Hindu theories of matter compared.

15. Now, let us turn for a moment to Hindu notions on this subject. What do we find here? Ideas strikingly modern meet us from the very dawn of the history of Hindu Scientific thought; the Paramanu, which may be said to correspond to the atom of our western chemists has ever been looked upon here as complex in structure, and never as a simple indivisible entity; the modern conception of an atom as being a complex proton-electron system finds its parallel in Hindu Scientific thought from its very commencement, appearing all at once in its full-fledged modernness without passing, as in the West, through the stage of positing a simple and uncuttable atom. For purposes of chemical analysis and synthesis, all substances were looked upon as being made up of five gross Bhutas (Mahabhutas or Sthulabhutas)—Prithvi, Ap, Thejas, Vayu and Akasha; these states corresponded, not to "earth, water, light, air and sky" as their common mistranslation has it, but, in all probability, to what Modern Science calls the "states of matter"—Prithvi corresponding to the solid state, Ap, to the liquid, and Vayu, to the gaseous, while

Thejas and Akash the two additional states of matter, corresponded probably to Radiant matter and Ether. " The five Bhutas stand for a classification of substances on the basis of their generic properties, resulting, as the Samkhyas hold, from the structural type of their constituent atoms—a classification more physical than chemical, or properly speaking chemico-physical, unlike the purely chemical classification of the so-called elements of Modern Chemistry. A Paramanu again, is a type of atoms corresponding to each Bhuta class, and indeed one and the same kind of Paramanu may comprehend atoms of different masses, if only these should agree in their structural type."(16) We may then look upon the Paramanu as corresponding to the atom of our modern western chemists, or to the brick-blocks of our analogy, but with a difference which may be explained thus. Modern science teaches that though we have some ninety different chemical elements, yet, the Atomic brick-blocks of all of these are everywhere built of the same two kinds of bricks, viz., the protons and the electrons; according to the Hindu view also, every Paramanu brick-block is considered to be built of two kinds of bricks, viz., the central bricks of one kind of Tanmatras (i.e., Proto-matters charged with specific energy of one kind, and corresponding to the modern scientists' Protons charged with positive electricity) and the peripheral bricks of another kind of Tanmatras (i.e., Proto-matters charged with specific energy of another kind, and corresponding to the modern scientists' Electrons, charged with negative electricity). So far, both views seem to agree; at this point, however, the Hindus have gone a step further; they consider that, corresponding to each of the five Mahabhutas (i.e., Prithvi (Solids) and other "States of Matter") there is a specific type, as it were, of proton-electron bricks; in other words, these are not one but five types of proton-electron bricks, corresponding to the five "States of Matter" (i.e., to the five Mahabhutas, Prithvi and the rest). As regards the exact nature of these five types of bricks, there have been some differences of opinion among different schools of Hindus thought. Ayurvedic authorities like Charaka and Sushruta follow mostly Samkhya view, and sometimes the Vedantic; I shall therefore make brief mention here of both of these views.

The Genesis of Atoms—The Vedantic View.

16. According to Vedantic Scientists, each of the five gross Bhutas (Mahabhutas) are derived from five corresponding subtile Bhutas (Sukshma Bhutas); these may be taken to correspond to the five Tanmatras of the Samkhyas which are, as I have stated above, proto-matters charged with energies of various kinds—the proton-electron bricks, if we may say so, that go to build up the Parimanus (the Atomic brick-blocks) of the five gross Bhutas; the Vedantists hold that, into the structure of the atom of every gross bhuta, all the five subtile Bhutas enter, in certain definite proportions; in the evolution of the atom of any particular gross Bhuta, say, Mahabhuta Prithvi, the corresponding subtile Bhuta (in this case, Sukshma Bhuta Prithvi) acts as the central radicle (corresponding to the proton brick of Modern Science) while all the other four subtile Bhutas go to form the peripheral Electron-bricks of our Parimanu brick-block; the process of transformation of a gross Bhuta from the subtile Bhutas is technically known as Panchikarana (quintuplication) which is illustrated thus; "The Mahabuta Earth, gross Earth-matter, is composed of four parts of subtile Earth-matter and one part each of the other forms of subtile matter. The Mahabhuta Vayu is composed of four parts of subtile gaseous matter and one part each of the other forms of subtile matter. And similarly with other Mahabhutas.

Hence if ak, v, t, ap, e, represent the five forms of subtile matter (Akasha, Vayu, Thejas, Ap and Earth), and AK, V, T, AP, E, stand for the corresponding Mahabhutas, we may represent the constitution of the Mahabhutas as follows:—

AK = ak-4 (v_1 t_1 ap_1 e_1) ak-4 being the radicle.
V = v-4 (ak_1 t_1 ap_1 e), v-4 ,,
T = t-4 (ak_1 v_1 ap_1 e), t-4 ,,
AP = ap-4 (ak_1 v_1 t_1 e_1), ap-4 ,,
E = e-4 (ak_1 v_1 t_1 ap_1), e-4 ,, "(17).

[16] Positive Sciences of the Hindus (1915 Edition) Seal, page 40.
[17] Positive Societies of the Madras (1915 Edition) Seal, pages 85–87.

As to the origin of these subtile Bhutas themselves, the Vedantic Scientists hold that each is derived from one which is higher in the scale till, ultimately, we come back, as in Modern Western Science, to one common basis of all matter ; thus, subtile Prithvi comes from subtile Ap, which comes from subtile Thejas, which comes from subtile Vayu, which again comes from subtile Akasha ; and all these subtile Bhutas are essentially Proto-matters charged with specific energies of various kinds.

From the above formula of Evolution it will be seen that, according to Vedantic Scientists, the contents of the central radicle is equal to the contents of all the peripheral units put together—a view that brings at once to our minds the notion of the Modern Scientist that the charge on the central proton is equal, though opposite, to the charges on all the peripheral electrons put together ; but, there is this fact to be noticed, viz., that the peripheral electrons would, in this view, be not of one kind but of four different kinds ; it would be very interesting to know if this view finds any support from Modern Science ; unfortunately, my equipment is far too meagre to pursue this line of enquiry further.

The Genesis of the Atoms—The Samkhya view.

17. According to Samkhya Scientists, the five kinds of Bhuta Paramanus (Atom brick-blocks) are evolved from the corresponding Tanmatras by the process known technically as Samshritta Viveka (Differentiation within the integrated); the building up of each kind of Bhuta Paramanu requires two kinds of Tanmatras (Proto-matter charged with energy) one kind of Tanmatra acting as the central radicle, while another kind constitutes the periphery, as indicated in the following table :—

Types of Atoms.	Tanmatras which act as the central radicle (corresponding to Protons of Modern Science.)	Tanmatras which act as the peripheral units (corresponding) to Electrons of Modern Science).
1. Akasha (Mono-Tanmatric).	*Shabda Tanmatra.*—(Proto-matter charged potentially with the energy of sound impacts ; possesses potentially parispanda or Vibration energy).	*Bhutadi*—the root of all proto-matters ; but it is not itself Tanmatra ; to pursue this inquiry further is to seek for first or final causes which is not attempted here.
2. Vayu (Di-Tanmatric).	*Sparsha Tanmatra.*—(Proto-matter charged potentially with the energy of Tactile impacts ; possesses potentially, Vibration energy plus Tactile energy).	*Shabda Tanmatra.*
3. Thejas (Tri-Tanmatric).	*Rupa Tanmatra.*—(Proto-matter charged potentially with the energy of Light and Heat impacts ; possesses potentially vibration energy plus Tactile energy plus Light and Heat energy.)	*Sparsha Tanmatra.*
4. Ap (Tetra-Tanmatric).	*Rasa Tanmatra.*—(Proto-matter charged potentially with the energy of Taste impacts ; possesses potentially Vibration energy plus Tactile energy plus Light and Heat energy plus Taste energy.)	*Rupa Tanmatra.*
5. Prithvi (Penta-Tanmatric).	*Gandha Tanmatra.*—(Proto-matter charged potentially with the energy of smell-impacts ; possesses potentially Vibration energy plus Tactile energy plus Light and Heat energy plus Taste-energy plus Smell energy.)	*Rasa Tanmatra.*

Genesis of Atoms—Comparison with the Modern Western view.

18. It is sometimes objected that, in the theories of Evolution of Atoms adumbrated above, there is a certain mixing up of "Energy" and "Matter"; that is quite true ; but it cannot be helped ; for that is the Law and order of Nature ; Modern Western Science itself is now being led to more or less the same position. When we are in the region of the practically weightless Electrons, we cannot help speaking of them, in terms of energy ; that is, as charges of negative electricity, just as the Hindus speak of their Tanmatras as being charges of specific kinds of energy. So too with

Energy, we find we cannot talk of it, except with reference to matter, just as we cannot define Matter, except with reference to energy ; for Energy means motion ; and motion means matter. Nowadays, we talk of Electrical " Energy " being stored, bought and sold, just as if it were an article of merchandise like petrol ; I do not know if it is " movable property " in the eye of the Law and within the meaning of Section 378, Indian Penal Code, so that legal " theft " can be committed in respect of it ; but moral theft occurs whenever A taps and steals the Electrical Energy from the storage of B and thus puts him to monetary and other loss ; and whether we realize it or not, it is not by mere metaphor that we speak of Electrical " Energy " in the same terms as we do such unmistakable " matter " like petrol ; similarly, when we fight for concessions and monopolies for exploiting oil beds in Persia, Asia Minor and elsewhere, our greed is really not for matter but for energy ; for every gallon of petrol means not merely a definite quantity of matter (carbon and hydrogen combined in certain definite proportions) but also a tremendous amount of energy locked up in it ; this energy is of various kinds ; it is only a part of its chemical energy that Western Science has learnt to make use of for work in our power-houses, mills, factories, and the like ; but, this is as small as the tiniest drop in the ocean when compared with the stupendous quantities—immensities upon immensities—of energy that remain locked up in its atoms. Fortunately for the world, Western Scientists have not yet been able to release this energy ; I say " fortunately " advisedly ; for, when one reflects over the savagest and basest uses to which scientific knowledge was applied in the recent war, one shudders to think of the diabolical ghastliness that may result if people with the mentality of those responsible for the horrors of the last war come to possess the secret of releasing energies that may blow up continents as easily as they now do palaces and forts. When we have proceeded thus far in our comparative study, a question irresistably presents itself before our minds and it is this : Is this " Atomic Energy " of Modern Western Scientists the same as the Tanmatric energy, which, as we have just seen in our discussion of the Hindu conception of the evolution of Atoms, plays so vital a part in the genesis of the Bhutaparamanu, corresponding to our chemical Atom ? The resemblance is very close ; but, I must resist the temptation to hazard a definite answer, as it really requires a much better knowledge of both systems than what I have been able to gather.

I may, however, mention here that I discussed the matter with a profound and encyclopædic student of Modern Physics, my friend Professor Yadunandan Prasad, M.A. (Cantab.) B.SC. (Lond.), who was very much interested to see the remarkable resemblances that do exist between the ancient Hindu, and the modern Western conceptions of the structure of the atom. He suggested to me that Tanmatric energy corresponded in all probability to the energy locked up in the Proton-electron nucleus of the atom, and that, while the five types of Tanmatras or Pancha-Bhutas that the Hindus speak of has no definite counterpart in Modern Physics, an explanation for the distinction may perhaps be found in the " Quantum " theory of Modern Physicists ; this is a very interesting and valuable suggestion ; for, the very word " Tanmatra " contains a definite suggestion of " Quantum " or measure (Matras), and of the five Tanmatras, the first or Akasha Tanmatra is spoken of as Mono-tanmatric, being charged with only one unit of Parispanda (Shabda or Vibratory energy), while Vayu Tanmatra is di-tanmatric, being charged with two units (Vibratory energy plus Sparsha or Tactile energy), and Thejas, Ap, Prithvi Tanmatras are likewise Tri-tanmatric, Tetra-tanmatric and Pentatanmatric respectively, being charged with one unit of energy-potential more than its predecessor in the tanmatric scale.

Such are the fundamental chemico-physical notions of the Hindus with which we must be familiar if we are to understand Ayurveda aright ; to my mind they show in all essential points, striking correspondences to the most recent teachings of Modern Western Science ; in certain points they have gone even further in their speculations ; will these conceptions also be justified by the future discoveries of Modern Science ? It is rash to assert and difficult to deny ; but, when one realizes how fully some of these theories have been justified by the most recent events in Modern Science, one cannot help entertaining the feeling that, as some theories have already proved true, the same may happen in the case of others as well. In this connexion, it is

also worth noting that the Hindu tradition about the origin of these theories refers to them as matters of direct observation and not of mere speculation. To understand how this comes about, we have to realize that the methods by which the Hindus sought to cognize things beyond the range of our senses, differed in one vital respect from the methods of the West; in Modern Science, we seek to overcome the limitations of our senses by equipping ourselves with various *external* aids like the microscope telescope, the spectroscope, the crescograph, cardiograph and the like; the Hindus however sought to effect the same results, not by providing their senses with external aids, but by improving their own *internal* organs of sense, so that their range of perception may be extended to any desired degree; the way of effecting this improvement was by exercising the senses in certain ways indicated in the scriptures and taught by the Guru to the Shishya when he was ready for it. That the acuteness of our senses could be appreciably increased is, of course, a matter of daily observation; by practice and effort, we train our ears to appreciate melodies to which we were dead before; certain hillmen, who live by hunting, are known to see and spot out their prey at distances, far too great for us to see or get a clear vision of; similarly, by practice and effort, we can appreciably increase the ranges of our other senses—smell, taste and touch. That our senses, like our muscles grow by regulated exercise is a proposition to which few perhaps will be inclined to object; but, the Hindu view is that there is practically no limit to this growth, save the limitations of one's own capacity for exertion, and that it is possible for master-minds to perfect their 'senses' (in which term, they include the mind also—'the sixth sense' as it was sometimes called) to so great a degree as to include, within their range, everything from the most microscopic to the most macroscopic—'from the Paramanu to the Paramahatwa' as the scripture has it. It seems to me that Western Scientists would be inclined to hold that there must be distinct limits to the growth of our senses as for our muscles, which cannot go on growing in strength indefinitely, no matter how perfect we are in practising our regulated exercises. The Hindus say that the analogy is not good and that the two cases are easily distinguishable; for our present purpose, however, it is unnecessary to discuss this matter any further; it is enough for us merely to note that the Hindu tradition asserts that the original propounders of such theories as that of the Evolution of the Atoms were persons endowed with the immense ranges of vision of which I have spoken; it is claimed, for instance, that when they taught about the structure of Atom, they did not merely speculate in the matter, but described what they really saw; it is however fully recognized that, as a piece of evidence of direct observation, it is of value only to those great seers who could see for themselves, and not for others; to these latter, it could be offered only as a good working hypothesis (or Kalpana), to which they were free to apply the various tests of a valid hypothesis before they accepted it; herein lies the difficulty of the Hindu method; because, the perfecting of the senses to the desired degree can be achieved, if at all, by only exceptional individuals of our generation; and therefore the satisfaction of direct observation is not possible to the great majority of us. Herein also lies the immense value of the external aids which Western Science provides us with; for, many of us can learn with ease how to use them in checking and verifying things for ourselves; and that is an advantage of very great value. It is for this reason that the Hindu theory of the genesis of Atoms conveys to us a fuller and clearer message when it is studied in the light of Modern Science; and what applies to the Atomic theory applies generally to the whole realm of Ayurvedic Physics and Chemistry, and it seems to me that the light of Modern Physics and Chemistry would be very valuable to Ayurvedists in the interpretation of their own ancient theories, besides affording them comparatively easy methods of verifying things for themselves. It would likewise be a consummation devoutly to be wished that some at least of the giant intellects of Modern Science would conduct their researches along the lines indicated by the ancient speculations; for some of these have already been justified by Modern researches; and that makes us hope that the same may happen in the case of others as well. It is therefore that I venture to hope that, in the best interests of both Ayurveda and Modern Science, each would learn from the other what the other can teach, so that by their united thoughts and endeavours, they may better serve not only the cause of Science as a whole, but also of what is more important, the cause of humanity itself.

CHAPTER IV.—PHYSIOLOGY AND ANATOMY.

Definitions.

19. Now that we have seen what the Panchabhutas mean, we are in a position to proceed to the consideration of the Tridhatus and the Tridoshas, which, between themselves, make up both Ayurvedic Physiology and Pathology. The first thing to note about them is to learn to know what they are *not*. Hence I consider it necessary to repeat at the very outset that the three Dhatus—Vata, Pittha, and Kapha are, *most emphatically, not* the three 'humours'—Wind, Bile, and Phlegm. What then are they ? In the first place, they are all Panchabhautic in composition—that is to say, built up of the five 'bhutas', already discussed ; they are therefore 'matter' in every sense of the term—not mere abstractions. Next, they are the three elementary units, from which the whole and every part, from the minutest to the grossest of our body is built ; hence it is that they are called 'DHATUS', which literally means 'SUPPORTERS'; they are, in literal truth, the mainstays and supports of the body ; where they are not, there the body itself is not ; without their constant support everywhere in the body, the body would perish ; when they are in normal equilibrium, it is health, and ill-health when they are not, in which case the 'Dhatus' are technically known as 'Doshas' literally 'Faults'; this is because, in this condition they give rise to 'Faults' or ill-health in the body. Some however use the term 'Dhatu' and 'Dosha' almost as synonyms. However that may be, it is an axiom of Ayurveda that health and ill-health are the 'functions' (in the mathematical sense) of Dhatu-equilibrium ; when normally disposed, the Dhatus are in their 'Prasada' (or pure) state, fit to be built up into the body ; when abnormally disposed, they are in their 'Mala' (or Impure) state, fit to be rejected and thrown out of the body as Kitta (Dross) ; when looked at from this standpoint of 'effecting impurity' (Malinikarana), they are also spoken of as 'Malas' (impurities) ; but it is to be understood that when we speak of Dhatus or Doshas as Malas, we are designating by one and the same term, two different states, which, in a sense, stand in the relation of cause and effect ; but, such use is not uncommon among Samskritists ; we have already seen that the technical word 'Bhuta' is used by some people to designate both the Sthula Bhutas (that is, substances belonging to the different 'States of matter' such as Prithvi, Ap, and the rest) and also the Sukshma Bhutas (called also Tanmatras, which I have spoken of above as 'Proto-matter' because they are the progenitors of Sthula Bhutas) ; for our present purpose, we may look upon the relation between Malas and Dhatus (or Dhoshas) to correspond to that between gross Bhutas and Subtile Bhutas (or Tanmatras) ; just as the term 'Bhuta' designated sometimes the Sthula Bhuta or Maha Bhuta, and sometimes the Suksmha Bhuta or Tanmatra, so also Dhatu or Dosha may be used to designate, sometimes the Prasada Bhuta Dhatus and sometimes the Kitta Bhuta Malas. When Samskrit was flourishing as the one common language of the learned, the exact connotation was easily understood by the context, just as, for instance, we easily understand the exact connotation of the English term 'Medicine' by the context in which it is used, though it is sometimes used in a wide sense including Surgery, Midwifery, and all other branches of Medical study, and sometimes, in a narrow sense, as when we speak of Medicine, in contradistinction to Surgery, Midwifery and the like. When however the study of Samskrit declined, there was the danger of these technical words being misunderstood, just as, for example, a person with insufficient knowledge of English may easily misunderstand us, when we speak of 'Promotion of Medicine'; he may think we are partial to Medicine, to the neglect of Surgery and other branches of Medicine ; this danger is even greater when we depend for our knowledge more on translations than on originals. It seems to me that, in this insufficient acquaintance with technical terminology, we may find some explanation of the fact that even Samskritist Hindus are known to have entertained the notion that Vata, Pittha and Kapha meant Wind, Bile and Phlegm ; for instance, the word 'Kapha' may mean the pure or Prasada Bhuta Dhatu in one context, while, in another, it may mean the impure or Kitta Bhuta Mala (or Dross phlegm) ; nothing is easier for the uninitiated than to jump to the conclusion that according to Ayurveda, 'Phlegm' was one of the three primary supporting elements on which life depended, the other two being Wind and Bile ; 'How pathetic' he may exclaim 'is the condition of these poor Ayurvedists, who so pitiably cling to these grotesquely ludicrous notions ?'. Of

course, the critic means well ; he does not mean to misrepresent Ayurveda ; it is his misfortune—not his fault that he mistook something to be Ayurveda, which however turns out to be not Ayurveda at all. It is with a view to avoid, as far as possible, such avoidable mistakes that I have dealt here, in some detail, with the connotations of the terms ' Dhatu ', ' Dosha ' and ' Mala '.

The Doshas.

20. Now, if these Doshas are material entities, how are they cognized ? It is held that they exist in the Human body in two states, viz., the Sthula or the gross state and the Sukshma or the Subtile state, Vayu, however, being, according to some authorities, always Subtile. In their Subtile states, they are Ateendriya—that is to say, beyond the normal cognition of our senses. How then are they known ? They are known, both in their normal and abnormal states, by the consequences of the actions for which they are responsible. Thus according to Charaka (Sutrasthan, Chapter 18) Pittha, Kapha and Vata are respectively responsible for the following :— ' Vision (as opposed to perception which is due to Vayu), Digestion, Heat-production, Hunger, Thirst, softness and suppleness of the body, lustre, cheerfulness and intelligence are due to Pittha in its normal state. Oily smoothness, smooth working of joints, general stability of the body, general build, potency, strength, forbearance, courage, and greedlessness are due to Kapha in its normal state. Enthusiasm, Inspiration and Expiration, voluntary actions like talking and walking, the due circulation throughout the body of its supporting elements like Chyle, blood, etc., and the due discharge from the body of its excretary products, are due to Vata in its normal state. These functions of Vata are further elaborated thus by Charaka in the Sutrasthan, Chapter 12 : Vayu upholds all the supporting constituents and their due circulation throughout the body. It exists in five forms, viz., Prana, Udana, Samana, Vyana and Apana. It is the urger of all voluntary movements, great and small, the producer of restraint as well as concentration of the mind, the stimulator of all the senses and the carrier to the mind of all sense impressions ; it holds together the various elements of the body in their proper form and maintains the cohesive unity of the body as a whole ; it brings about speech ; it is the basis of sound and touch, as well as the root matter of the organs of hearing and touch ; it is the origin of joy and enthusiasm and the stimulator of Agni. It is the cause of the Doshas getting dried up and the Malas (impurities) being thrown out of the body ; it is the cause of division in all vessels of the body, both microscopic and macroscopic ; it is the cause which makes embryos in the womb to take particular forms ; and it stands as evidence of the existence of life ; all these are the actions of Vayu, when unexcited. When we are taken through this catalogue of functions for which Vayu, Kapha and Pittha are responsible, does it require any argument to establish the fact that the current translations of Vayu, Pittha and Kapha as Wind, Bile and Phlegm are grossly incorrect and misleading ? I, therefore, make no attempt to prove what should be obvious to every critic ; but he will perhaps ask—and the question is perfectly legitimate—' What is the principle that underlies this classification into Vata, Pittha and Kapha ? To be scientific, a classification must be orderly and not chaotic ; I can see no intelligible principle or order, in this chaotic mixing up of Digestion, Intellection, Greedlessness, Respiration, Enthusiasm, and all the rest of it.' Now, this, as I said, is perfectly legitimate criticism. How is this answered in Ayurveda ? From my study of the subject it seems to me that the Ayurvedists' case is best stated thus :—In the apparent chaos of functions detailed above we find on careful analysis that the functions of every Dhatu are partly mental and partly physical. In modern Western thought mental processes and physical processes are kept apart ; physiology primarily deals with physical processes only, while the emotional and mental phenomena are dealt with by the growing Science of Psychology, which, in the study of its own problems, is finding itself face to face with problems of metaphysics and Philosophy, with the result that there are sometimes lively discussions and arguments on the charge of one having trespassed into the domain of another. In Hindu thought, however, there has never been any isolation of these several branches of study ; in fact, when we remember that according to Hindu Physiologists, man is defined as physical body plus mental body plus Atma (and not merely physical body as in the West) such an isolation becomes really impossible. This is not the stage nor is there

any present need for suggesting which one of these views is more satisfactory than the other; for, in all such cases, we have to judge each theory on its own merits and from the practical consequences which result from each when applied to problems of preventing and curing diseases; in the last resort, this practical application to problems of health and ill-health is really our crucial test, which will conclusively prove the soundness or otherwise of the premises with which we started; before that test is applied, we cannot dogmatise one way or another; every scientist is at perfect liberty to assume whatever premises he wants to, provided he is prepared to show that the theories logically proceeding from them afford satisfactory explanations for the facts of our experience, and the practices based on the theories work satisfactorily when applied to problems of health and ill-health. Subject to this test, the Hindus are as much at liberty to assume that both Mind and Body are equally 'matter', as the Westerners, to demur from such a view and hold that mind is not "matter" like body; both are equally valid as Scientific assumptions; a wrong notion however seems to prevail in some quarters that Western theories on this matter possess what some poeple call 'mathematical certainty', although distinguished Western Physiologists themselves are under no such illusion; one of the greatest of them, Sir C. S. Sherrington, speaking only the other day as the President of the British Association for the advancement of Science, is reported to have stated thus:—'Features of nervous working resemble, over and over again, mental. Is it mere metaphor when we speak of mental attitudes as well as bodily? Is it mere analogy to liken the warped attitude of the mind in a physcho-neurotic sufferer to the warped attitude of the body, constrained by an internal pain?' It is obvious that, in raising these questions, Professor Sherrington is himself suggesting the answer that the likeness between physical and mental processes may *not* be a matter of mere metaphor or analogy; in fact, when one finds that the mind acts exactly as the body does, it is only natural that the idea should present itself to him whether the explanation of the similarity in the workings of mind and body may not lie in the fact that functional similarity is correlated with structural similarity, and mind also is as material a thing as the body. With the Hindus, however, the matter has never been left in doubt; what Professor Sherrington suggests here merely as a probable view has ever been the accepted view of all schools of Hindu thought. They have always held that both mind and body are alike 'matter', though the 'matter' of mind is subtler than the 'matter' of body which is comparatively gross. From this standpoint the likeness between physical and mental processes becomes not only easily explicable but really inevitable; if there were no such likeness, *that* would have been a matter for surprise or explanation. If we keep this view at the back of our minds, then, we can see why in the catalogue of functions of Vata, Pittha and Kapha which we are now examining, we find that each of them are responsible not only for certain physical processes but also for certain mental ones as well. It is because of this above-stated essential difference between the Hindu and Western standpoints that we find it difficult to express the various functions given above for Vata, Pittha and Kapha wholly in terms of Western Physiology. Several attempts have been made (and some by scholars of repute) to show that Vayu, Pittha and Kapha stand for certain definite things in Western Physiology. There have also been certain fanciful interpretations which are apparently the desparate attempts of certain well-meaning Ayurvedists, who thought that, to show the excellence of Ayurveda, they had somehow or other, to show that its teachings squared with the teachings of Western Medicine. My profound respect for the teachings of Western Medicine, and the Western Sciences generally, prevents me, however, from taking the view that in investigating Ayurveda I must proceed on the assumption that the last word on the subject has been said by Western Medicine and that Ayurveda must be accepted or rejected, according as it agrees or does not agree with it. Western Science has taught me that it is quite unscientific to make such an assumption and that the only scientific course is to judge each question on its own merits and with as open a mind as I could manage to have. Holding this view, I make no desparate attempts to fit in Ayurveda with Western Medicine where it refuses to fit. Comparative study of the two systems is undoubtedly of great value which I would certainly pursue to the best of my ability; but that does not mean that I must distort Ayurveda in order that it may fit into the Procrustes' bed of Western Medicine. Moreover there is as yet nothing in our Western Physiology with which the Thridhatu theory can be properly compared. The starting point of our modern Western

Physiologists is the Cellular theory, whose development is held to have tolled the knell of the parting day of the Greecian 'humoral' theory. The Thri-dhatu theory, on the other hand, goes many steps beyond the cell of our Western cellular theory, on to Pancha Bhutas already discussed, and the Thri-gunas, to be discussed presently; in fact, the Thri-dhatu physiology of Ayurveda begins just where the Orthodox cellular physiology of Western Medicine ends. Hence it seems to me that we cannot at present equate the Thri-dhatu theory exactly with anything known to modern Western Physiology. But the time may soon come when such a comparison may become possible; the most recent researches in the West are leading the vanguard of our Western Scientists into regions, which appear so 'Ayurvedic'; already, the Biologist is looking beyond his original comparatively simple cell with its protoplasm, nucleus and centrosome, on to the complexity of Chromosomes, Ids, Determinants, Biophors, and even to 'Vital' atoms (or Bio-atoms, if you please, so strongly reminiscent of Vata, Pittha and Kapha 'Corpuscles'); in the field of Immunity, the exponents of both the 'cellular' and 'humoral' doctrines have gone far beyond the original simple conception of the cell, on to complexities on complexities, of Haptophores, Amboceptors, Complemento-phile, Ergophore, Opsonins, Agglutinins, Precipittins, Cytolysins, Alexins, Sensitisation, Anaphylaxis and so on—truly, a bewildering array of Neologisms, wherewith to describe things and events, which are, for the most part, as speculative as the Thri-dhatu theory itself, and also exhibit, like it, a distinct leaning towards 'humoral' conceptions of colloids and Bio-Chemistry. Similarly, in the field of Endocrinology and Psychology, Western scientists have now begun to talk of body-fluids (Humours ?) influencing, and being influenced by, emotional and mental states, reminding us of the Ayurvedists' view of Vata being responsible for enthusiasm, Pittha, for intellection and Kapha for forbearance and so on. It is perhaps as well that I illustrate my point by a quotation from the writings of an illustrious Western Scientist, Professor Goddard, who, in his work on "Psychology of the Normal and Subnormal" (pages 134–135), expresses himself thus, in reference to this topic: "Cannon has shown that a stimulation of the adrenal gland produces all the phenomena of anger and rage, and conversely that production of anger or rage by any other method effects the secretions of the adrenal glands; and we know that the phenomena above enumerated are controlled by the sympathetic system. Cannon worked with adrenin, the secretion of the adrenal gland. This is one of the glands of internal secretion. There are a number of other such glands—the thyroid, thymus, pineal, pituitary, parathyroid, carotid and coccygeal, areas of Langerhans of the pancreas, interstitial cells of the testicle and corpora lutea of the ovary.

There is no reason to doubt that some, if not all, of these other glands may have similar relations to emotion."

Difficulty of Correlating Ayurvedic Technical Terms with those of Western Medicine.

21. If at all the Thri-dhatu theory can bear comparison with any conception of Western Science, it is in the regions which I have indicated above—regions, where true Bio-Physics and Bio-Chemistry supplement the so-called 'mechanistic' physico-chemical conceptions of to-day, and where Physics and Metaphysics, Science and Philosophy, Physiology and Psychology are not isolated in water-tight compartments but meet together to enrich our knowledge of the nature of man and life generally: it is this extended region which has ever been the province of Ayurveda; and now that master-minds of Western Science have begun to turn their attention to these regions, we may soon be able to say how far Ayurvedic conceptions are supported by experimental researches of our Western brethren; as I have stated elsewhere, there is one essential difference in the method of scientific investigation between the East and the West, and it is this: here the methods laid down for observing and verifying things for ourselves are too difficult to be followed by the average man in the street, whereas the methods of the West are easy enough to be within his reach; hence it is that, to most of us, the theories of Ayurvedists are carried home with a greater sense of intellectual reality and conviction, if we could see that they are supported, wherever possible, by the experimental methods of the West; and it will be my business, as we go on, to show how far Ayurveda is already finding

support from recent researches in Western Science. Knowing as I do something of the amazing brilliance of some of our Western scientific brethren, I fervently pray that the day may soon come when as a result of their labours in this field we will be able to compare the Ayurvedic Thri-dhatu theory with some corresponding theory of Western Physiology; but, that day is yet to come; for, in so far as the region of Ayurvedic physiology begins just where that of Orthodox Western physiology ends, proper comparisons are not yet possible. It therefore seems to me that at present orthodox Physiology can neither prove nor disprove the Thri-dhatu theory and that all criticisms based on such an untenable comparison are futile, whether advanced by pro-Ayurvedists, who have sought to support the correctness of the Thri-dhatu theory by showing that Vata, Pittha and Kapha correspond to certain definite things of orthodox Western Physiology, or, by anti-Ayurvedists, who have sought to discredit the theory by saying that it cannot hold its own against the rational and scientific Physiology of the present day. To my mind it is not a question of *one* scientific and rational theory versus *another* which is not so, but a question between two presentations, both of which are rational and scientific; the ultimate test for deciding which of these views is the more acceptable one is by seeing which of them explains better the facts of experience, and works better, when applied to the practical problems of health and ill-health. By these tests we shall judge them later on; meantime I feel obliged to say that, for the reasons stated, I find it difficult to follow either the pro-Ayurvedists or the anti-Ayurvedists, who seek to support or discredit the Thri-dhatu theory on the ground that it is or is not supported by orthodox Western Physiology. Of what avail is the appeal to modern Western Physiology when it does not recognize the very existence of the Thri-dhatus as they are known to Ayurvedists? Incidentally, it may be mentioned that the explanations of these Dhatus given purely in terms of Western Physiology by certain pro-Ayurvedists, whose zeal for Ayurveda was apparently not combined with a sufficient knowledge of Western Medicine, has really served to spread erroneous and even ridiculous notions on the subject; this unfortunate result was, of course, not intended, but was, more or less, inevitable under the circumstances. In speaking of similar attempts to explain the 'Chakras', [—a name, which literally means 'wheels' or 'whirlpools', and is applied to certain centres of consciousness in the Sukshma Sharira or subtle body, which, though accepted axiomatically by all Hindu scientists (Ayurvedists included), is not recognized at all by Western physiologists] the learned author, Arthur Avalon (Sir John Woodroffe) makes the following statements, which are very apposite to the present discussion:—"I desire to add that some modern Indian writers have also helped to diffuse erroneous notions about the Chakras by describing them from what is merely a materialistic or physiological standpoint. To do so is not merely to misrepresent the case but to give it away; for Physiology does not know the Chakras as they exist in themselves—that is, as centres of consciousness—and of its activity as Prana-vayu, Sukshma or subtle vital force; though it does deal with the gross body which is related to them. Those who appeal to Physiology only are likely to return non-suited" ([18]). Every word of this is as true of 'Dhatus', as of 'Chakras', neither of which is recognized by orthodox Western Physiology. It is true that at the physical level there are points of contact between them and we may be able to institute some comparison in this region; but, even here, the task is by no means easy; I might perhaps illustrate this difficulty by an analogy. The citizens of Madras may be classified in various ways—territorially, linguistically, professionally and so on; if we try to express a particular division of any one of these classifications in terms of the divisions of any other, we find at once that there is a great difficulty in doing so. Take, for instance, the lawyer division of the professional classification; lawyers may be found among all linguistic sections, among people talking Tamil, Telugu, Malayalam, Urdu, English and so on; likewise they may be found distributed in all the territorial divisions of Madras; in other words, while lawyers occupy a horizontal position, if we may say so, in the professional chart of Madras, they occupy a vertical position in the linguistic and territorial charts, being present all the way through, from top to bottom. If further we imagine that to one, the limits of the City of Madras are the same as the municipal limits while to another they denote 'the university limits' within the meaning of the new University Bill (which includes a wider zone, viz., an area of ten miles radius from Fort St. Geoege), then we can

([18]) The Serpent-power—Arthur Avalon—page 34.

easily see how very difficult it is to equate the several divisions of each classification exactly in terms of one another. Now, to my mind, attempts at trying to fit in the Ayurvedic Thri-dhatu classification into the classification of Western Physiology seems to stand on more or less a similar footing. Thus, it is said that Vata stands for nerve-force; that is true enough; but, Vata certainly means more than that; for, it is also responsible for certain emotional and mental processes, which are not included in nerve-force; similar remarks apply to Pittha and Kapha also, which, as we have seen already, are responsible for various physical as well as mental activities. It therefore seems to me that while we may perhaps be able to interpret the physical activities for which Vata, Pittha and Kapha are responsible in terms of Western Phyisology, we have still to use Ayurvedic terms for indicating their mental activities, as no help could be got from Western Physiology in a field which is dealt with in the West, by Psychology, Metaphysics or Philosophy.

The Gunas.

22. Now, the terms which Ayurvedists use in this connexion for denoting the different classes of mental processes are based on what they call the 'Gunas' of matter. Mind being 'matter', is necessarily subject to all the laws which govern 'matter' generally. According to all schools of Hindu thought, all 'matter'—from the subtlest to the grossest—is characterized by the exhibition of the three 'Gunas' which are generally translated as 'qualities'—a rather unsatisfactory rendering; because the term 'qualities' suggests the idea of a pure abstraction, not the reality or substance, that 'Guna' is in Hindu thought; the notion of 'quality' is applicable only from the standpoint of Purusha (or spirit), because they are not Purusha's essence or substance (if we may use such a term with reference to Purusha) but merely accessories; from the standpoint of Pracriti or 'matter' they are its very substance, or rather three substances into which primal matter differntiated itself when the universe first came into manifestation. They are 'Dravyas' or 'substances' and not attributes. As stated by Wilson in his commentaries on Samkhya Karika, "In speaking of qualities, however, the term 'Guna' is not to be regarded as an unsubstantial accidental attribute, but as a substance discernible by Soul through the medium of faculties." Though described as three 'Gunas', one Guna alone of these is never found isolated from the others—they are ever a mutually interdependent 'Unity-in-trinity'. Professor Seal speaks of them thus in his Positive Sciences of the Hindus (1915 Edition), pages 3 to 5:—"These Gunas are conceived to be Reals, substantive entities—not, however, as self-subsistent or independent entities but as interdependent moments in every real or substantive existence. . . The Gunas are always uniting, separating, uniting again. Everything in the world results from their peculiar arrangement and combination. Varying quantities of Essence, Energy and Mass, in varied groupings, act on one another, and through their mutual interaction and interdependence evolve from the indefinite or qualitatively indeterminate to the definite or qualitatively determinate. But though co-operating to produce the world of effects, these divers moments with divers tendencies never coalesce. In the phenomenal product whatever Energy there is, is due to the Element of Rajas, and Rajas alone; all matter, resistance, stability is due to Tamas, and all conscious manifestation to Sattva. The nature of the interaction is peculiar. In order that there may be evolution with transformation of Energy, there must be a disturbance of equilibrium, a preponderance of either Energy or Mass-resistance or Essence over the other moments. The particular Guna which happens to be predominant in any phenomenon becomes manifest in that phenomenon, and the others become latent, though their presence is inferred by their effect." That erudite oriental scholar, Sir John Woodroffe (till recently Judge of the Calcutta High Court), in referring to this subject of the interaction of Gunas in his "Tantra of the Great Liberation" (Introduction—pages 31–33) shows clearly how differences in Guna-collocations make for difference of 'temperament' in different persons—a subject of first-rate importance in Ayurveda:—"The term 'Guna'", he says, "is generally translated 'quality', a word which is only accepted for default of a better. For it must not be overlooked that the three Gunas (Sattva, Rajas and Tamas), which are of Prakriti, constitute her very substance. This being so, all Nature which issues from her, the Maha-karana-svarupa, is called Tri-gunatmaka, and is composed of the same Guna in different states of relation to one another. The functions of Sattva, Rajas, and Tamas are to

reveal, to make active, and to suppress respectively. Rajas is the dynamic, as Sattva and Tamas are static principles. That is to say, Sattva and Tamas can neither reveal nor suppress without being first rendered active by Rajas. These Gunas work by mutual suppression.

"The unrevealed Prakriti (avyakta-prakriti) or Devi is the state of stable equilibrium of these three Gunas. When this state is disturbed, the manifested universe appears, in every object of which one or other of the three Gunas is in the ascendant. Thus in Devas, as in those who approach the Divya state, Sattva predominates, Rajas and Tamas are very much reduced. That is, their independent manifestation is reduced. They are in one sense still there, for where Rajas is not independently active it is operating on Sattva to suppress Tamas, which appears or disappears to the extent to which it is, or is not, subject to suppression by the revealing principle. In the ordinary human Jiva, considered as a class, Tamas is less reduced than in the case of the Deva, but very much reduced when comparison is made with the animal Jiva . . . . Again, as between each member of these classes one or other of the three Gunas may be more or less in the ascendant.

"Thus, in one man as compared with another, the Sattvaguna may predominate, in which case his temperament is Sattvik, or, as the Tantra calls it, divyabhava. In another the Rajoguna may prevail, and in the third the Tamoguna, in which case the individual is described as rajasik, or tamasik, or, to use Tantrik phraseology, he is said to belong to Virabhava, or is a Pashu respectively. Again the vegetable creation is obviously less tamasik, and more rajasik and sattvik than the mineral, and even amongst these last there may be possibly some which are less tamasik than others." The question has been raised, and answered too, by Hindu thinkers as to why the Gunas of 'Matter' are three, and three only, neither more nor less; but, a consideration of this question takes us to speculations concerning the 'First' or 'Final Causes', which it is best to leave unattempted here. It is enough for us to note that this triplicity of Prakriti (or matter) corresponds to the triplicity of Purusha (or spirit), and that this triple nature, alike of 'Matter' and 'Spirit', is a primal, fundamental and inevitable characteristic—the very essence so to speak—of every manifested existence; for, in this phenomenal universe, there is neither 'matter' (Prakriti) alone, nor 'spirit' (Purusha) alone, but it is ever Prakriti-Purusha (spirit-matter)—spirit ever limited by matter, and matter, ever ensouled by spirit. But, of course, 'spirit-matter' is of various grades—minerals, vegetables, animals, human beings and so on. What differentiates us distinctly as Human beings from the other kingdoms of Nature is not so much the fact that our physical bodies have a distinct anatomy of our own (even our corpses have that) but the fact that Jivas (or Egos or Consciousnesses) have reached, in their evolutionary ladder, to a particular rung (viz., the human rung), while the Jivas (Egos or Consciousnesses) animating the animal and other kingdoms of Nature are still at its lower rungs—younger brothers of ours, standing at those levels, where we ourselves stood yesterday or the days before, counting by Nature's time. Looking at it in this way, there is nothing in this world which is not a Jiva or a Consciousness or a living being; everything is living matter characterized by the three Gunas—Rajas, Satwa and Tamas; we have Rajasic, Satwic or Tamasic animals, vegetables, foods, drinks, drugs, etc., just as we have Rajasic, Satwic, or Tamasic human beings. It is all of one Life—all is 'spirit-matter' (*Purusha-Prakriti*). It is to this teaching that the great scientist Bose was referring, when, after demonstrating by a series of brilliant researches, that there was a unity of life between the so-called 'Living' and the so-called 'Non-living', he added that what he was demonstrating was nothing new, but merely what his ancients had taught for generations on the banks of the Ganga. In the light of this teaching, we can understand why the Ayurvedists hold that the Life of the human being, like Life in any other kingdom of Nature, must necessarily exhibit a primal and fundamental triplicity, viz., Rajas, Satwa and Tamas—a triplicity which in the living human being is shown in Vata, Pittha and Kapha respectively; in the light of that same teaching we can see why they use a special terminology (viz., that of Vata, Pittha and Kapha) in respect of the living human body, while in speaking of the same body, after the human Jiva has left it, they use the general Panchabhutic terminology, applicable to all physical matter generally; the reason seems to be this: as long as the human Jiva is in, or with, our physical

body, there is a special life pervading the body as a whole and every one of its component parts, quite apart from the innumerable lives animating the innumerable cells of which the body is built; and it is to show this distinction between the presence of a human Jiva in the living human body and its absence in the corpse, that the special terminology of Vata, Pittha and Kapha is reserved for use in connexion with the former only, while the term 'Panchabhutas' is used to designate the five kinds of elementary substances out of which the physical body of the living human being, as well as that of the corpse is built.

The thri-dhatu Theory.

23. From this it will be seen that Vata, Pittha and Kapha correspond to the Panchabhutas, as and when, operated by a human Jiva; the Panchabhutic analysis of the body is essentially a physical conception (just as the Physicist may say that matter is built up of solids, liquids, gases, etc.), while the Thri-dhatu analysis is essentially a Biological or rather a Bio-physical one, corresponding to the primal and fundamental triplicity, viz., Rajas, Satwa and Tamas, exhibited by the human Jiva as indeed by all other Jivas or beings. As regards the correspondences between these two classifications (viz., the Physical and the Biological), Akash and Vayu are held to enter into the constitution of Vata (which is Rajasic) while Thejas is held to enter into the constitution of Pittha (which is Satwic) and Prithvi and Ap, of Kapha (which is Tamasic). I must also mention here that, according to some authorities, the reason for not taking separate note in the Dhatu category of Akash at one end of the scale of Panchamahabhutas and of Prithivi at the other, is this: Akash is unmodified and all-pervading, while Prithvi is the last of the five Mahabhutic states of matter, and there is no further modification beyond it; from the standpoint of Dhatu equilibrium, the due maintenance of which is the concern of Ayurveda, it is not necessary to take separate note of things which are not modified; hence it is that Akash is grouped with Vayu while Prithvi goes with Ap. Be this as it may, the outstanding fact remains that the Thri-dhatu conception is essentially a Biological one, just as the Panchabhuta conception is essentially a physical one. Just as, in Western Science, we speak of the innumerable substances that constitute 'matter', as being made up of Solids, Liquids and Gases, and possibly also, of substances in two other states of matter, viz., Radiant matters and Ethers, so also Ayurveda speaks of the Panchamahabhutas, Prithvi, Ap, Thejas, Vayu and Akash, as making up the whole of our physical matter, which when operated by the human Jiva, is spoken of as being made up of Vata, Pittha and Kapha; these three Bio-physical elements, or corpuscles charged with human life, correspond respectively to Rajas, Satwa and Tamas, the three Gunas, which constitute the primal and fundamental triplicity of Nature, characterising manifested existences of all grades. From this it will be seen that the terms Vata, Pittha and Kapha just like the terms Prithvi, Ap, etc., of the Hindu Scientists, and the terms Solids, Liquids, etc., of Western Physicists, stand, in the living body, for three large groups of substances, the individuals of which, however much they may differ from one another, possess nevertheless certain characteristics common to every member of the group; thus, Vata corpuscles are all predominantly Rajasic, Pittha corpuscles, all predominantly Satwic and Kapha corpuscles, all predominantly Tamasic; of course a biological or functional variation like this, argues the presence of a corresponding variation in physical or structural bases since in Nature we always find function and structure intimately correlated. Hence it is that Ayurvedists have held that the Vata corpuscles are made up of Akash and Vayu, Pittha corpuscles, of Tejas; and Kapha corpuscles, of Ap and Prithvi; in other words, the physical bases of the peculiar biological (that is to say, the Rajasic, Satwic and Tamasic) natures of Vata, Pittha and Kapha are the peculiar structural types of the different Bhuta-Paramanus (or chemical atoms); and these, as we have seen before in our discussion of Ayurvedic Physics, are held to be of five different kinds, corresponding to the five states of Matter, viz., Prithvi, Ap, Thejas, Vayu and Akash.

We may therefore define Vata, Pittha and Kapha thus:—

Vata is that primal constituent of the living body, whose structure is Akash-Vayu, and whose function is Rajasic, it being concerned with the production of those physical and mental processes which are predominantly Rajasic (creative or dynamic) in nature; hence, as has been noted in the catalogue of the functions of Thri-dhatus

discussed already, the presence of Vata is to be inferred in such mental phenomena as exhibition of enthusiasm, concentration, etc., as also in such physical phenomena as respiration, circulation, voluntary action of every kind, excretion and so on. It will be seen that these physical phenomena are included among those which Western Physiologists would assign primarily to the activities of the nervous system as a whole (both cerebro-spinal and sympathetic).

Pittha is that primal constituent of the living body, whose structure is Thejas and whose function is Satwic, it being concerned with the production of those physical and mental processes which are predominantly Satwic (sustentive or transformative) in nature; hence the presence of Pittha is to be inferred (vide catalogue of functions of the Thri-dhatu given before) in such mental phenomena like intellection and clear conception, as also in such physical phenomena as Digestion, Assimilation, Heat-production and so on; it will be seen that these physical phenomena are among those which Western Physiologists would include under the activities of the nutritional system as a whole (including Thermogenesis and the activities of glandular or secretary structures—especially of the Endocrines or Ductless glands, whose Internal Secretions or Hormones are now known to be of such vital importance in Digestion, Assimilation, Tissue-building and Metabolism generally).

Kapha is that primal constituent of the living body, whose structure is Ap-Prithvi and whose function is Tamasic, it being concerned with the production of those physical and mental processes which are predominantly Tamasic (Conserving or Static) in nature; hence the presence of Kapha is to be inferred in such mental phenomena as exhibition of courage, forbearance, etc., as also in such physical phenomena as the promotion of bodily strength and build, integration of the structural elements of the body into stable structures, the maintenance of smooth working of joints, and so on. It will be seen that these physical phenomena are among these which western physiologists would include under the activities of the skeletal system as a whole; but, it is difficult to interpret in terms of Western Physiology, that all-important function of Kapha, which is concerned in protecting the tissues from being consumed, as it were, by the internal 'fires' of Pittha, if they were not kept in check by the 'waters' of Kapha. It seems probable that the problem of explaining how the internal 'fires' in the living body were ever kept burning bright, though surrounded always by the 'waters' of the body, exercised the minds of the Hindu Scientists, just as, since the times of Lavoisier, the minds of Western Scientists are being exercised over the analogous problem of explaining how, at the comparatively low temperature of about 37° C, physiological oxidations are being continually carried on in the living body, at a comparatively rapid rate, while, outside the living body, the same materials are consumed or oxidised with extreme slowness.

So much for the structure and function of the Thri-dhatus; as regards their origin, it is held they are inherited to start with; thereafter, they are in a state of continual flux, because of continual metabolic changes by interaction with nutrition and environment; being in constant circulation throughout the body, they regulate the life-activities of the body as a whole, as also of every one of its constituent parts down to the tiniest Paramanu.

Prakriti (Temperament).

24. Persons are broadly marked off from one another into three classes or groups, viz., Vatala, Pitthala, Shleshmala, according as the type of their inherited Thridhatu-constitution shows respectively a predominance of Vata, Pittha or Shleshma; those Dhatus which are not predominant may be either co-operant or latent, so that we have a number of sub-groups, each with its own type of inherited Thri-dhatu balance; then again, depending upon quantitative variations, we have innumerable ways in which Thri-dhatu equilibrium is possible; it is due to such differences in the constitution of the inherited dhatu balance that every person somehow differs from every other person, although all are classifiable under one or other of the three primal and fundamental groups spoken of above, viz., persons of Vata, Pittha and Kapha prakritis, or 'temperaments' as the English rendering has it. In Ayurveda, it is of vital importance to know the Prakriti or 'Temperament' of every person, because all his life-activities, both in health and disease, have to be judged and adjusted with reference to his own type of inherited dhatu-constitution; and we

cannot intelligently adjust his Nurture (including his nutrition and environment) unless we know his Nature or Prakriti. For the proper diagnosis of a person's Prakriti, a careful examination (both physical and mental) is necessary; the characteristic features of each group are set down at length in works on Ayurveda; but, for our present purpose, it is not necessary to go into those details; it is enough to know that it is a cardinal principle of Ayurveda that all human beings are broadly classifiable under the three primal groups of Vatalas, Pitthalas and Shleshmalas, according as the constitution of their inherited dhatu-triads show a predominance of Vata, Pittha or Kapha substance. If these substances are considered as 'Humours', then, undoubtedly, Ayurvedic Thri-dhatu theory is a 'humoral' theory; but, in this sense, have not the priests of modern medicine itself begun to preach doctrines which are decidedly 'humoral'? And if leaders of western medicine have themselves begun to teach that the constitutional peculiarities of an individual are dependent on the nature of certain 'body-fluids' (or 'humours', if you please), how then can we talk of 'The Humoral Theory' as an exploded superstition? Take, for instance, the following extract from the writings of a distinguished British Physician—Dr. Leonard Williams, and see how strikingly 'Ayurvedic' it reads, even to the very notion of a person's inherited features and constitutional peculiarities depending on the peculiar mode of mixing or combining his inherited 'humours' or 'essences' as he calls them :—

"Let us now look a little more closely into the matter and enquire what are the motors of this unconscious mind. We know that it resides in the ganglion cells, in the viscera and the ductless glands, but what part respectively do these separate portions play? Well, the answer is that, while the time is not yet ripe for dogmatic statement, there is a large mass of evidence which goes to show that the ductless glands, the endocrines, with their essences, their hormones as they are called, constitute the mainspring of this surprising mechanism. Nor does the importance of the endocrines stop here, for, according to the exact proportion in which their essences are admixed in your blood, you are tall or short, dark or fair, phlegmatic or choleric, saint or sinner, sexual, homo-sexual or sexless, male or female." (British Journal of Psychology, Medical Section, Volume II, page 262.) Then again, we have Prof. Goddard stating thus in his "Psychology of the Normal and the Sub-Normal" (page 228) :—"Cannon's and Crile's discoveries and other work with the ductless glands made it entirely possible that, while we may not be dealing with blood, yellow bile, and whatever fluids the ancients thought of under the name of black bile and phlegm, we may nevertheless be dealing with such fluids as are secreted by adrenal glands, thyroid glands, the thymus and the other glands of internal secretion. It would seem quite probable then that we are to think of different individuals as having inherited different constitutions in these particulars."

So too we may cite evidence in support of the 'humoral' theory from the large mass of facts that have now gathered round the subject of the Transfusion treatment for haemorrhage; by transfusion is meant the transference of the blood from a person called the Donor, to another person called the Recipient; the treatment came into special prominence during the great war, not only because there were a large number of persons suffering from loss of blood due to wounds and other similar causes, but also because the spirit of sacrifice was in the air and more people came forward to make the needed sacrifice of their own blood to save the lives of their fellow beings; it, however, happened in some of these cases that, in spite of the operation being performed with the greatest care and skill in technique, patients died suddenly and apparently unaccountably. It was then discovered that some inherited individual peculiarities existed in the blood of different individuals and that the explanation of the tragic consequences which the treatment led to in some cases lay in the fact that the blood of the donors and the recipients were incompatible. 'It was also found possible' writes Dr. Geoffrey Keyness, M.D., of the Surgical Unit, St. Bartholomew's Hospital, 'to classify people into four groups, which exist in a given race of people in almost constant proportions. Of these, one group, the smallest (one per cent), cannot give blood to any one except to people of their own group, though they can be given the blood of any one. A second group, fortunately the largest (44 per cent), are able to give their blood to any one without ill-effects, though they can only be given the blood of their own group. The two remaining groups, of intermediate frequency

(15 per cent), are mutually antagonistic, though their blood can be given to members of the first group mentioned and of their own group. A test for these groups can be easily made and is completed in a few minutes, so that it is now the practice to use as blood-donors people of the second group or of the same group as the recipient. The danger of death from incompatibility of blood has thus been eliminated. It is believed that this grouping is not dependent on any fortuitous conditions, such as, diseases that the individual may have suffered from but to be due to differences of chemical nature, which are inherited in a definite, though as yet undetermined, manner. The blood of a baby is found to have its characteristic group reaction as soon as it is born, and it does not necessarily belong to the same group as its mother.' In the light of these facts it would be rash to continue to assert that the 'humoral' theory is an exploded superstition; on the contrary, it may really be that, in some form or other, it forms a cardinal article of our scientific faith.

Metabolism.

25. Metabolic changes, like all life activities in general, are brought about, maintained and regulated by Vata, Pittha and Kapha; we may consider first the processes by which the food ingested is transformed into various tissue-elements or 'Dhatus', as they are called. It has to be noticed here that Ayurvedists use the same name, viz., Dhatu (literally 'support') to designate both the primary Dhatus Vata, Pittha and Kapha, as also the secondary ones, viz., Rasa, Rakta, and other elementary tissues, which we are going to consider now. The exact sense in which the word is used in any particular case can be easily made out by the context. It may also be mentioned here that these secondary Dhatus are also called 'Dushyas' (or Vitiatables), so-called because they can be vitiated by the primary Dhatus (Vata, Pittha and Kapha), which when looked at from this standpoint of *causing* vitiation are spoken of as 'Doshas' (literally faults). We may now go on to consider how food is transformed into various Dhatus; the first step is the conversion of food into Rasa dhatu; this takes place in Amashaya, Grahani and Pakwashaya (Stomach, including Pylorus and Duodenum); the agents concerned in the production of Rasa from food are Vata, Pittha and Kapha. Vata in the form of Prana Vayu sends food down the gullet into the stomach, whence after certain changes it is sent down the Grahani into Amashaya; in these digestive chambers food is acted upon by Pittha (Pachaka Pittha) in the menstruum of Kapha present there and gets converted into Rasa (Chyle), which contains, in essence, all the ingredients necessary for the formation of the various tissue-elements of the body. Thus, the essence of food becomes the Rasa Dhatu, while its dross is rejected as Mala. In a similar way we get by the repeated action of Vata, Pittha and Kapha, the transformation of Rasa (Chyle) into Rakta (Blood), Rakta into Mamsa (Muscle), Mamsa into Medhas (Fat), Medhas into Asthi (Bone), Asthi into Majja (Marrow) and Majja into Shukra (Reproductive elements): thus Rasa is driven by Vayu to the heart and then to the liver and spleen, where the appropriate pro-rakta constituents of Rasa are acted upon by Agni or Pittha (Ranjaka Pittha) in the menstruum of Kapha and become transformed into Rakta; this again is acted upon by Vayu and Agni (Mamsagni) in the menstruum of Kapha, when transformation into Mamsa takes place; this process is repeated till, by successive transformations, we get Asthi, Majja and Shukra. It is also held that every one of the Dhatus from Rasa to Shukra elaborate, during the course of their metabolic tranformation, some peculiar subtle essence, which goes to form the Ojas Dhatu which is, as it were, the quintessence of all the seven Dhatu essences; the presence of Ojas is of the very essence of our life-activities; and if the successive metabolic transformations that end in the production of Shukra Dhatu (the Reproductive Elements) are not properly formed, then, the Ojas-formation suffers, and life-activities themselves may cease altogether from lack of Ojas, if the metabolic transformations cease to be performed for an unduly long time. There is a general resemblance between the conceptions adumbrated above and certain speculations recently advanced by certain physiologists of the West; both schools speak of some peculiar essences or molecular complexes as being given out by the cells during the course of their metabolic transformations; both also agree that if metabolic transformations and the formation of these essences or molecular complexes were to cease, then, the organism itself may cease to live; but, the Ayurvedic conception of 'Ojas'

does not appear to have any definite counterpart in our western speculations, although they also speak of certain molecular complexes resulting from cell-activity as being taken up by the reproductive cells. The existence of these general resemblances, however, which I have spoken of above, may be inferred from the following quotation :—

"Rubner states moreover, that if a cell, the yeast cell, for example, by artificial means is force to live without growing and multiplying, it dies in a very short time. In some way the processes of growth contain the very source of the maintenance of life. The injurious by-products which accompany simple metabolism in the living matter are in some way obviated or neutralized by the growth changes. Rubner suggests, somewhat in the line of Darwin's theory of pangenesis and of Weissmann's theory of the cause of death in the somatoplasm, that the body-cells give off certain molecular complexes which are necessary to the growth processes, and these complexes are taken up by the reproductive cells. After the animal has reached the period of puberty, of reproductive power, and provision is thus made for the perpetuation of the species, the individual organism is depleted of the power of growth, and senescence and death become inevitable. There are no actual facts at present to support such a view and, indeed, it is at variance with prevalent ideas regarding the lack of direct influence of the somatic cells upon the germ cells." (Text-book of Physiology—Seventh edition—Howell, pages 1023–24.)

It is quite true that these conceptions do involve the notion of somatic cells exerting direct influence on germ-cells ; but this presents no difficulty at all to the Ayurvedists ; for, they have never denied the existence of such an influence ; and their theories of heredity and evolution have never stood in need of positing the Weismannian duality of an immortal germ-plasm, leading a life of its own, quite independent of the mortal somatoplasm. I shall not go into these Ayurvedic theories here because they are based on the notions of the survival of human personality, Karma and Re-incarnation—notions, which, though axiomatic to Ayurveda and Hindu thought generally, are not at all accepted by the orthodox science of the day ; it is true that some of the foremost among the modern scientific leaders—men like Myers, Crookes and Lodge for instance,—have directed their powerful scientific search-lights on to these topics, and greatly daring, expressed their scientific faith in the survival of human personality, paying incidentally the usual penalty of being labelled as 'cranks' for entertaining and promulgating such unorthodox conceptions ; the prevailing view, however, of modern science is still against the acceptance of such notions ; but as regards the main question itself, viz., the influence of Somatic cells on Germ-cells, Weismannian duality is being attacked in more than one scientific quarter and the Ayurvedic view is finding support from the most recent researches of Western Scientists themselves, as may be gathered from the following quotation :—

"In science one of the most successful Teutonic warriors appears to be Weismann, who imposed his yoke on the larger part of the biological world. They would still seem happy under it, even if uneasy at times, and, perhaps, more doubtful than they appear. It is the duty of the orthodox to disclaim doubt and to profess belief with fervency. This is especially binding upon those who occupy the pulpit : if the priests of neo-Darwinians, that cult purified of pangenes, use, and disuse, and the transmission of acquired characteristics, showed hesitation and ceased to preach dogmatics, their reputations would be ruined, and the congregation become a lost flock. Too little stress is laid on the vices of orthodoxy ; for, not only does it make men blind, it makes them cling to untenable positions. It would be more than terrible to discover that theirs was the worship of no translated but a vanished god. For did not Zeus himself die, and is he not buried in Crete ? . . . .

"To show that the natural tendency of the physiologists is to accept such a view as transmission, Starling may be quoted. His work on hormones, done in conjunction with Bayliss, shows that he has a great appreciation of the power of certain secretions to influence in the profoundest degree digestive and metabolic processes. The possibility of prostate secretion tabloids curing chronic mastitis may be mentioned (Lane). Since few biologists concern themselves as much as they should with physiology, and not at all with pathology, which is just as necessary a part of their proper apparatus, it may be pointed out that some internal secretions have such observable effects in the minutest proportions. Thus it becomes intelligible how the

minute parathyroids, four of which weigh two grains, have such great physiological effects as to make certain they are real determinants. According to Schafer, a strip of intestinal muscle is affected by adrenalin in a solution of 1 in 20,000,000 and a strip of coronary artery by 1 in 50,000,000. Pysemsky and Kravkov state that the effect of one part in 250,000,000 could be detected when perfusing a rabbit's ear with Ringer's solution. Such results may at least suggest that an almost infinitely small portion of an inorganic catalyst or organic secretion, whether coming over in an egg or sperm cell, or taken in later from the parental host, might be a determinant of immense capacity. . .

"If the orthodox school could give any hint as to how a variation is to be explained, and what it is that is changed in the germ-plasm or the chromosomes, they would be compelled to come down to the earth and stand on the firm ground of chemical or bio-chemical action." (Warfare in the Human Body—Morley Roberts—pages 183, 191 and 193.)

However this may be, it is a fundamental conception of Ayurveda that the specific agency by which the metabolic transformations of all kinds are brought about is that of our dhatu-triads, which, to start with, were transmitted from parent to offspring; whether these dhatu-triads correspond exactly to the catalysts, enzymes, harmones and other activiting agencies of modern Western Physiology is a question which is easier raised than answered. There is, however, no doubt that as a result of the most recent researches, the views of western physiologists regarding metabolic changes and physiological oxidations generally are now seen to run on similar general lines as those of Ayurveda; where however Ayurvedists speak of thri-dhatus, Vata, Pittha and Kapha, the Westerners seem to speak of endo-enzymes, per-oxidases, catalases and other activating agents; in Western Physiology, the importance is now being shifted from such gross organs like stomach, duodenum, liver, spleen, pancreas, etc., to subtle ferments and catalysts of various kinds contained in our body-cells; the general resemblance of this modern Western view to the ancient Ayurvedic notion may be seen by comparing the Ayurvedic account, already given of how digestion and metabolism generally are brought about by the agency of Vata, Pittha and Kapha, with the following account of the same processes as given by modern Physiologists:—"The point of view actually adopted by most workers is that the living matter effects its wonderful changes in the food-material by making use of intracellular ferments or enzymes (endo-enzymes). That such enzymes are formed, one may say, generally in the tissues of the body, has been brought out in the preceding chapters upon digestion and nutrition. It is necessary only to recall the facts that lipase, the fat-splitting enzyme, has been isolated from many tissues, and that in the liver and muscles and probably other tissues there exist enzymes capable of converting glycogan to sugar or the reverse, and of oxidizing the sugar completely by the serial action of several intra-cellular enzymes. Finally, with regard to the protein material, it is now recognized that proteolytic enzymes exist in many, if not all, of the living tissues.

"There is no doubt, therefore, of the existence of intra-cellular enzymes, and that these substances play a conspicuous part in the metabolism of food-material. The lipase, the diastase, and the autolytic enzymes (proteases) just referred to all belong to the group that cause hydrolytic cleavages—that is, they induce splitting or decomposition of the material by a reaction with water. The supposition has naturally been made that probably the oxidations of the body are effected also by enzymes which in some way activate the oxygen. Enzymes of this character have been found; they are designated in general as oxidases or as oxidases and peroxidases, the former term referring to those enzymes that effects oxidations in the presence of oxygen, while the latter is applied to certain enzymes supposed to act only in the presence of peroxides.

"In practically all of the tissues there exists an enzyme which is capable of breaking up hydrogen peroxide with the liberation of oxygen. The evolution of oxygen is readily seen when a solution of hydrogen peroxide is brought into contact with a living tissue. This peroxidase has been given a special name, catalase, but its relations to the processes of physiological oxidation have been interpreted in different ways by the various workers in this field." (Text-book of Physiology—Howell—7th Edition—pages 975, 976 and 977.)

Ayus.

26. So far, we have spoken of what we may call the qualitative aspect of our thri-dhatu-constitution: but, it has also a quantitative aspect, if we may say so, on which depends our Ayus (life-period or specific expectation of life); in other words, our original dhatu-constitution regulates not only the nature of our metabolism but also the length of the period that metabolic transformations and life-activities generally can continue to run. Hence it is that Ayurvedists lay so much stress on the determination of Ayus (Ayu Pareeksha); for, the treatment for one whose dhatu-triads are achieving the very last few transformations of their life-activities, cannot be the same as for another whose dhatu-triads can still achieve metabolic changes for a long time to come; Ayurveda (literally, the Science of Ayus), provides rules for adjusting our nurture (nutrition, environment, etc.), to our nature (inherited dhatu-triads), so that the latter may go on achieving their transformatory life-changes for as long a time as their Ayus can go. This conception of the entire nature and duration of our life-activities being dependent upon the nature of our thri-dhatu-constitution seems to bear general resemblance to certain notions, which have now been held by some of our modern physiologists; where, however, the Ayurvedists speak of Vata, Pittha and Kapha substances, they (our Western brothers) speak of 'special chemical complexes'; but, as may be seen from the following quotations, the fundamental conceptions are essentially similar:—"The course of metabolism is such that it is self-limited, and even if perfect conditions were supplied natural death would eventually result. As a rule, however, death is, so to speak, accidental rather than natural. This point of view was emphasized by Ray Lankester in the distinction which he drew between specific longevity and potential longevity. By specific longevity he designated the expectation of life at birth of a normal individual, this expectation being determined by the interaction of two factors, namely, the innate constitutional properties of the protoplasm and adverse environmental conditions. By potential longevity is meant the duration of life which might be expected under an ideal environment.

"Rubner suggests that the power to grow possessed by the cells of the young organism depends upon some special mechanisms of a chemical nature, that is, probably certain special chemical complexes which are responsible for the 'growth tendency' (Wachstumstrieb). In connexion with this growth-energy or growth-tendency it will be remembered that in the chapter on internal secretion evidence was given that in early infancy the thymus forms apparently an internal secretion or hormone which controls or stimulates the process of growth, and the anterior lobe of the pituitary gland also forms an internal secretion which has a similar action.

"After the period of maturity has been reached the question arises whether the subsequent duration of life can be foretold or formulated in any definite way. . . The human cell is characterized, as compared with that of the other mammalia, by its much greater total capacity for obtaining energy from the food-stuffs. This capacity, the property of assimilation, implies chemical changes and transformations in the living matter, and the fact that eventually this property languishes and expires, that is, the fact that there is such a thing as natural or physiological death, means that the somatic protoplasm is capable of effecting only a limited number of such transformations." (Text-book of Physiology—Howell—7th Edition—pages 1020, 1022 and 1023.)

So much for the Thri-dhatu physiology; from such study as I have been able to make of this subject, it is clear to me that here, as elsewhere, the ancient Ayurvedic and modern Western Physiology can both benefit from an understanding study of each other; the methods and conceptions of each are so helpful to the other, that, by their joint endeavour, they can promote and quicken the progress of Science far better than they can, when each follows its own isolated course of study and investigation.

Ayurvedic Anatomy.

27. In Ayurveda, Anatomy and Physiology are generally treated together under the heading of 'Shareera'; the relation between them is undoubtedly very intimate, they being the two limbs of Biology. Though for the convenience of description the study of structure (or Anatomy) is in Western Medicine dealt with separately from the study of Function (or Physiology), still it is only when they are studied together as the two limbs of Biology that the real value of each to the other and to Medicine as a whole is best appreciated.

The past and the present of Ayurvedic Anatomy is so very well reviewed by Dr. Kaviraj Gananatha Sen in the introduction to his Pratyaksha Shareeram (a work on human anatomy written in Sanskrit) that I cannot do better than cite the following extracts from his masterly review:—'That the subject of Anatomy formed part of a preliminary course in Medicine and Surgery in ancient India admits of little doubt. Nay, a short course of Anatomy was once held a necessary adjunct in the intellectual outfit of even a general student, so that writers of the Puranas and Dharma Shastras found it expedient to include short discourses on the subject in many of their works. Anatomical discourses are also found in the hoary Vedas and in the aged Nirukta of Yaska, as also in old Buddhistic literature. In the ancient medical works of Sushruta and Bagbhata, both major and minor surgical operations, such as Laparotomy (opening the abdomen), Amputation of limbs, Embryotomy, operations of the Intestines, Lithotomy and various plastic operations have been described with such precision that the anatomical knowledge which this presupposes could not have been of a mean order. Numerous quotations of descriptive anatomy from an ancient work of Surgery called Bhoja-Samhita occur in commentaries nearly a thousand years old. Clear references to the circulation of blood occur in the works of Charaka and Baghbhata and the fact that the blood derived its colouring matter from the spleen is distinctly mentioned by Sushruta. Dissection of the human body has been enthusiastically recommended by Sushruta and Bagbhata and there can be no doubt that the practice was in vogue in the palmy days of India's intellectual sunshine.' As Dr. Hoernle has very aptly remarked—'Probably it will come as a surprise to many, as it did to myself, to discover the amount of anatomical knowledge which is disclosed in the works of the earliest medical writers of India. Its extent and accuracy are surprising, when we allow for their early age—probably the sixth century before Christ and their peculiar methods of definition' . . . . Nevertheless, the ravages of time and the increasing impracticability of dissection have landed us on an age when all anatomical texts in their original form are lost to us. I say impracticability—not neglect—advisedly. Nearly 2,200 years ago, the great Emperor, Asoka, whose dominion extended over the whole of India and beyond, prohibited the practice of human dissection by a Royal Edict. During the hard times that followed, dating from the Greek invasion, human dissections were hardly possible in a Buddhist-ridden country. Dr. Puschman clearly tells us that even in Europe, 'Dissection of the human subject was in the first centuries of the middle ages opposed by religious and political ordinances and also by social prejudices.' And the learned historian goes on—'Many doctors provided themselves with bodies, when they could not get them in a legitimate way, by theft.' We have it from the same source that 'At Bologna, dissections on the human subject were probably carried out as early as the 13th century.' 'The Senate of Venice in 1368, issued an order that dissection should be performed once a year.' Again, practical teaching in Anatomy was developed in the universities of other countries at a later period and to a much smaller extent than in the academies of Italy. In India, however, Sushruta writing over 2,000 years ago enjoined in no faltering terms—'Therefore, whoever wishes to practise Surgery, must prepare a corpse in the proper way and see by careful dissection every part of the body in order that he may have definite and doubtless knowledge.'

"Modern histories of India begin where the true history of ancient India ends. The birth of Buddha or the reign of Asoka the Great, marks not the beginning but the end of India's past glory. A true history of the great achievements of the sons of India before that epoch is yet to be written. It was during that period extending over hundreds of years that the Medical Science, as well as many other branches of science and literature, made great progress and shed their lustre on distant climes like Egypt, Greece, Rome and Arabia. . . . 'Ever since the invasions of the Greeks (327 B.C.), India had so many vicissitudes of fortune that one who arrays the facts of history before the mind's eye can hardly wonder how so much of the past glory was lost. The real wonder is—how so much has yet survived. . . . . ' In Anatomy, the loss has been very heavy. All original works having been lost, Hindu Anatomy now survives only in a few meagre and desultory dissertations in the so-called 'Anatomical sections' (Sharirasthana) of the larger Ayurvedic works now extant. The Tantric Literature, which elaborately describes the Brain, the

Spinal Cord, the Sympathetic chains of Ganglia and the different Plexuses of nerves (Nadi) is now shrouded in so much mystery that few people suspect that there is such a world of anatomical facts concealed in it. All these, together with numerous anatomical terms and references accidentally occurring in various portions of the existing texts, now constitute the scattered relics of what once was an elaborate system of Anatomy. The quotations from Bhoja Samhita, occurring in the ancient commentaries of Dallana and Chakrapani, are indeed so varied and numerous that, if put together, they would make a good-sized volume of Anatomy and Surgery. The recently discovered work 'Sharir Padmini,' already referred to before, is of little practical value to the learner of Anatomy as it was written in an age when no verification by dissections was in vogue or practicable. Thus, the so-called Anatomy of all extant Ayurvedic texts including the summaries called Charaka and Sushruta Samhitas, bristles, as a matter of fact, with omissions, interpolations and inaccuracies of ages and is neither systematic nor descriptive. Later writers from Baghbhata down to Bhavamisra, in their ignorance of the true meaning of ancient texts, have only burdened the literature with what may be called a 'Fanciful Anatomy' of their own invention. Undoubtedly, this has done more harm than good to Ayurvedic literature. No wonder then that the progress of Ayurvedic Medicine should have been so much retarded during the last few centuries."

I venture to think that, under the circumstances stated, the best way of bringing Ayurvedic Anatomy up to date is to do what Dr. Kaviraj Gananatha Sen himself has done, viz., to re-edit and re-write Ayurvedic Shareeram in the light of modern Western Anatomy, which has now been rendered precise and comprehensive, by the patient and phenomenal labours of a succession of devoted anatomists. I venture too to hope that Western scientists would make an understanding study of the 'Chakras' (centres of consciousness), the 'Marmas' (Vital points), and the many other anatomical details given in the ancient Tantric Literature; for, I know something of the wonderful brilliance of our Western Scientists and the wonders they can achieve, if only they would apply their trained and sharpened intellects to the investigation of the mysteries which are now locked up in our ancient Tantra Shastras. It seems to me that here, as elsewhere, there is vast scope for both Ayurveda and Western Science, to exchange thoughts and each learn from the other, what the other can teach.

CHAPTER V.—ÆTIOLOGY AND PATHOLOGY.

Ayurvedic Aetiology.

28. Aetiology or the causation of disease, according to Ayurveda, may be summarized thus * :—Health is when a person's 'Dhatu-equipoise' is normal, and ill-health, when it is abnormal; Vata, Pittha and Kapha, which are spoken of as Dhatus (or supports) when in their normal equipoise, and are referred to as Doshas (Faults) when their equipoise becomes abnormal; because in this condition of abnormality, they vitiate or cause faults in, the secondary Dhatus like Rasa, Rakta, etc. Now, this abnormality of Dhatu-equipoise is brought about, not spontaneously, but by such external causes as Mithya-Ahara-Vihara (Faulty nutrition and conduct). Hence, ayurvedists say that causation of disease is two-fold, viz., Extrinsic (Bahya) and intrinsic (Abhyantra). The nature of these Extrinsic and Intrinsic causes is summarized by the original propounders of Ayurveda in certain classical formulae or aphorisms, admirably concise and terse, and yet highly expressive and comprehensive; naturally, they are bound to suffer badly even in the best of translations. We will consider the external causes first.

I. External cause (Bahya hetu) is described under three heads—

(i) *Asathmy-endriyartha Samyoga* (असात्म्येन्द्रियार्थसंयोग)—*Imcompatible correlation of senses with their objects.*—Ayurvedists explain this as follows: Bhautika Dravyas (Panchabhutic substances or Physical objects) cannot make for health or ill-health without coming into relationship with our bodies; and it is only through Indriyas (senses) that such relationship can be established. Since Indriyas

* For much that is contained in the following, I am indebted to the authoritative evidence (written in Sanskrit) of the Venerable Swami Lakshmi Ramaswamiji Acharya of the Government Ayurvedic College, Jaipur.

are five in number, five-fold are the modes in which physical objects can come into relationship with our bodies, although manifold each of them become, when their divisions and subdivisions of many grades are taken into account; each of the five modes, in which the senses can come into relationship with their objects may show abnormality of three kinds, viz., Atiyoga, Heenayoga and Mithya Yoga (excessive, defective or perverted correlationship). Take, for instance, the sense of Taste or Rasa; we may have excessive, defective or perverted correlation by tasting (that is, eating or dinking) too much, too little or unsuitable articles. Similar remarks apply to other senses also. It will be seen that this category includes all those causes where external sense-objects of any kind are concerned.

(ii) *Prajnaparadha* (प्रज्ञापराध)—*Faults of understanding.*—This as reference to causes which rise from within, so to speak, and not from without, as in the case of external sense-objects; the phenomena coming under this category are usually classified under three heads, viz., Shareeram (bodily), Manasam (Mental), and Vachikam (spoken); these become causes of disease when, due to faulty understanding, they become excessive, defective or perverted (Atiyoga, Heenayoga and Mithyoga) and thus cause abnormality of Dhatu-balance.

(iii) *Parinama* (परिणाम) is quite a technical word which has reference to seasonal, climatic and other variations which are governed by the time-factor; if, by excess, defect or perversion (Atiyoga, Heenayoga, or Mithya Yoga) they become abnormal, then, they may cause disease, by way of causing abnormality of normal 'dosha-equilibrium.' Thus, ill-health may be caused by such agencies as too severe or too mild seasons, the prevalence of winter conditions during summer or of rain during the non-rainy season or any other such abnormality, or even by mere non-adjustment to individual needs, even where the seasons, climate, etc., are normal, as, for instance, when a person who has all along lived in a cold country finds himself not in his own normal summer conditions but in those of the blazing tropical sun.

It is under these three categories that according to Ayurveda, all external causes of diseases are classifiable, no matter whether, at present, they are known or unknown. It will be seen that this classification is quite a comprehensive one, where every conceivable cause can find its own natural place.

II. Intrinsic cause (*Abhyantara hetu*).—This is of two kinds:—

(1) *Dhatu Vaishamya* (Abnormality in the equilibrium of the 'Dhatus')—in which term are included both the three primary Dhatus (Vata, Pittha and Kapha) called Doshas or Faults when they are considered in relation to disease, and the seven secondary Dhatus (Rasa, Rakta and others) called Dushyas or Vitiatables when they are viewed as the structures vitiated by the Doshas and manifesting their deranged condition.

(2) *Guna Vaishamya* (Abnormality in the equilibrium of the 'Gunas')—a term which has been already explained; of the three Gunas, Satwa, Rajas and Tamas, it is held that only Rajas (stimulator) and Tamas (inhibitor) can become Doshas (or Faults) while Satwa (Balance or Harmony) is always a Guna and never a Dosha. This category has reference to *mental* doshas (Manasa Dosha) just as the first, Dhatu Vaishamya has reference to Physical Doshas. Cupidity, anger, rage, jealousy, indolence, etc., are mental Doshas or Faults. The time has gone by when some well-meaning students of Western Medicine used to say that Ayurveda unscientifically mixes up Ethics and Medicine, in laying down, as it does, that unethical conduct (for example, getting into a fit of anger, rage or jealousy) was one of the causative factors of disease; modern research is now confirming the ancient teaching; we now know that feelings like anger and rage can set up, and be set up by abnormal conditions of the physical body. "Emotion causes" says Crile "a more rapid exhaustion than is caused by exertion or by trauma except extensive mangling of tissue, or by any toxic stimulus except the perforation of Viscera." "Cannon has shown" says Professor Goddard, "that a stimulation of the adrenal gland produces all the phenomena of anger and rage, and conversely, the production of anger and rage by any other method affects the secretion of the adrenal glands. . . . There are a number of other such glands . . . There is no reason to doubt that some, if not all of these other glands may have similar relation to emotion." We also know that abnormal action of these glands, however caused, may

result in such obvious physical diseases, like Addison's disease, Graves' Disease, Myxoedema, Cretinism, Acromegaly and so on. In the light of these facts it would be rash if we still continue to speak of the above-mentioned Ayurvedic view as an unscientific one. It is true that Western Scientists have now the agency of some 'physical' structure, like Adrenals, Thymus, Thyroid, etc., whereby they can explain the ancient notion; they now make use of the term 'Endocrine action,' by which they can apperceive the truth of the ancient view; but, the facts were there all the time, although it is only now that we are finding an explanation for them.

There are two modes or forms, it is held, in which the extrinsic causes may exist in relation to disease. In one (called the Nija form) the extrinsic cause first sets up abnormality of Dhatu-equilibrium which results in the painful condition called disease, while, in the other (called the Agantu form) the painful condition is first produced, and is followed later by the manifestation of abnormal Dhatu-equilibrium: Injury, poisoning, Parasitic germs, etc., come under this heading. Diseases produced in the first or Nija way are known as Nija diseases, while those produced in the second or Agantu way are known as Agantu diseases; but, though they thus differ in their modes of causation, yet, after disease is manifested, they are similar in their clinical manifestations; for, unless Agantu causes result in abnormality of Dhatu-equilibrium, the disease cannot have any real or continued existence; it is not every injury (even though painful for the time) that produces disease; some may be quite ephemeral and pass off without eventuating in disease; it is only when body-conditions are such that the Agantu cause actually produces the manifestation of Dhatu-morbidity that it can be spoken of as being the cause of disease. Hence it follows that abnormality of Dhatu-equilibrium is the essential feature of both Nija and Agantu diseases.

There are two ways in which abnormality of Dhatus may occur, viz., Vriddhi (increase) or Kshaya (decrease); there are various methods by which this increase and decrease can be diagnosed; but, a discussion of these methods will not be taken up here, as it will naturally come under the head of 'Diagnosis.'

Ayurvedic Pathology.

29. Ayurvedists trace the development of the abnormality of Dhatu-equilibrium through the following six stages or *Kriya Kalas*, as they are sometimes called :—

(1) *Sanchaya or Chaya* (*accumulation*) is the stage when the dosha, instead of circulating freely, accumulates in a particular part as *stagnant Dosha*.

(2) *Prakopa* (*Excitation*).—When the stagnant dosha has accumulated and permeated a structure there is excitement from aversion towards similars and attraction towards contraries. This is known as Prakopa (excitation), which is also explained as Prarambha rupa or *initial stage of disease*.

(3) *Prasara* (*spreading*)—This is the stage where the excited dosha extends to another part.

(4) *Sthana Samshraya* (*taking up another location*).—This is the stage where the excited dosha, having extended to another part, becomes located there, causing specific diseases of those structures (e.g., diseases of blood, stomach, bladder and so on). This stage corresponds to the *Purvarupa or Prodromal stage of diseases*, which we will come to presently.

(5) *Vyakti* (*manifestation*).—This is the stage where the abnormality of Dosha-equilibrium results in the fully developed form of disease; if the previous stage corresponded to Purvarupa (or Prodromal stage), this stage corresponds to *Rupa* (*or fully developed stage*).

(6) *Bheda* (*variation*).—This is the stage where diseases become chronic, incurable, etc. The importance of recognizing this stage lies not only in its being a very valuable aid in prognosis, but also in the fact that when diseases go to this stage, they may act as predisposing causes of other diseases, or may so vitiate the germinal elements as to make for the *esse* of congenital diseases in the offspring.

It is only right to mention here that some Ayurvedists, object to the statement that abnormality of Dhatu-equilibrium (Dhatu-Vaishamya) is the intrinsic cause (Abhyantara hetu) of disease; their argument is as follows :—abnormality of Dhatu-equilibrium or Dhatu-Vaishamya itself is verily disease; it may be that it is

sometimes in its unmanifested form (Anudbhuta Dasha), but the unmanifested form is one with the manifested form and not its cause. This is undoubtedly admirable logic which, if adopted, would leave us with only one cause of disease, viz., that which we have hitherto called the extrinsic cause (Bahya hetu). There is no harm in adopting this view and change our terminology accordingly. But the other terminology is a well-established one, being in actual use these many centuries; and this is a point which cannot be lightly ignored. There is however no objection to the use of any of these terminologies, provided we define exactly in what sense we use them; really, it is only a difference in name, not in essence.

Ayurvedic and Modern Western views compared.

30. Now, the question may be asked—in fact, it has already been asked—' How do Ayurvedic theories of causation stand comparison with the modern Western theories ?' From my comparative study of Ayurveda and Western Medicine, I find myself unable to support the view that has been sometimes authoritatively expressed to the effect that Ayurvedic view cannot hold its own against that of modern Western Science; on the contrary, I find that Ayurveda can give points to us if we are willing to learn; certainly, there has been less exhibition in Ayurveda than in Western medicine of too hasty a promulgation of new and novel theories followed by their subsequent repudiation, and of that alternate enunciation and denunciation of hypotheses which is sometimes mistaken for progress.

Let us now compare the Ayurvedic theory of the causation of disease with the modern Western one and see which of these suffers by comparison. So far as inherited diseases are concerned, Western Science knows as much or as little about their transmission, as about the phenomena of heredity itself, whose mystery still remains, more or less occult, in spite of the researches of a brilliant galaxy of scientific stars of the first magnitude. In a most recent Text-Book on this subject (Green's Manual of Pathology, 12th Edition, p. 4), I find the following statement in respect of this topic: "The tendency to inherited disease either exists in the ovum at the commencement of development or is acquired by the ovum in fertilisation; tendencies formed later are obviously acquired . . . With regard to the actual mode in which disease is inherited, it is in some cases possible that the poison, the actual cause of the disease, is present in the ovum or spermatozoon, as has been shown to be the case in the silkworm disease (Pasteur). But how diseases and tendencies to disease which are not due to any specific poison are handed down, we know no more than how it is that children inherit the features of their parents." So much for the western theory. What has Ayurveda got to say in the matter ? We have already seen that, according to them, when Doshic morbidity goes on to its sixth Kriyakala and attains the stage of Bheda (variation), then it may make not only for chronicity, incurability, etc., of disease, but may also so vitiate the germinal elements (Shukra dhatu) as to produce a moribific diathesis in the offspring. So far, both views are alike; to explain the further stages of this problem, the Ayurvedists have their theories of Adrishta and Karma; but I will not make this the occasion for discussing these theories, because they have not yet been recognized by the orthodox science of the west and we cannot therefore appeal to it to judge the value of the Ayurvedic view. To the Ayurvedists themselves it offers a satisfactory explanation, where we have to say we do not know; in any case, so far as this topic is concerned, there seems to be nothing in our western theory, which the Ayurvedist has not already got in his own; on the other hand, he has certain theories, which our westerners have not got; but, they are of such a nature as cannot be verified by methods known at present to the west.

Regarding acquired diseases, we have already seen what the Ayurvedic view is; as regards the western view, I take the following from 'Green's Pathology' referred to above (12th edition, page 4):

"*Acquired disease.*—Diseases occurring in an organism or part possessed of normal vital energy must necessarily be the result of external conditions. The chief causes of acquired disease are: mechanical injuries, extremes of heat and cold, alterations in the pressure of the atmosphere, electrical shocks, defective food, lack of air and sunlight, mineral and vegetable poisons, and parasitic organisms. In pathology the distinction popularly drawn between 'injury' and 'disease' cannot be maintained."

It will be seen that every one of the items mentioned above are included in the Bahya hetu (extrinsic cause) of the Ayurvedists. But, there is undoubtedly one fundamental difference between the Ayurvedic and the modern western conception, and it is this : the Ayurvedic view is, if I may say so, subjective, while the modern western view is objective ; but, the subjective view has a great advantage over the objective in its fundamental element of universal applicability ; it may perhaps be better if I illustrate my point by an example. Let us suppose we wish to classify the various invasions of India ; we may do it in two ways ; in one we may classify the invasions, as those of either land or sea or air ; in the other, we may classify them as those of the Greeks, the Scythians, the Muhammadans, the Europeans and so on ; the first is all-comprehensive and universal, applicable for all time ; because, all invasions must take place in one or other of these three modes ; but the second is applicable only to the present and the past, and that too, only so far as it is known ; and if there are other invasions in future, the list will have to be added to, whereas, in the first case, all future invasions will naturally go in under one or other of the three headings that have been once for all laid down, for all time as it were. Now, in the light of this analogy, let us consider the views of Ayurveda and modern medicine regarding the invasion of body by external agencies of disease. The Ayurvedists have argued thus : The only ways in which the body could be invaded are through the senses and the mind ; hence, if we classify the external causes of disease under these heads, they will include not only all causes that are now known to us, but also those which may become known in future. Hence, it is that their classification of causes of disease under the heads of 'Asathmyendriyartha, Prajnaparadha, and Parinamana' seems to be so complete and comprehensive. This is also the reason for my saying that the Ayurvedic classification is subjective and universally applicable ; the western classification is, on the other hand, objective and has to be added on from time to time ; it looks at the invasion of the body from the standpoint of the diverse objective agencies that can invade it, and thus its list will only contain those agencies that are already known, while others that may become known in future will have to be newly added on from time to time ; for example, in the list of causes of acquired disease which I have quoted above from "Green's Pathology," we find mention of the following only :—" Mechanical injuries, extremes of heat and cold, alterations in the pressure of the atmosphere, electrical shocks, defective food, lack of air and sunlight, mineral and vegetable poisons and parasitic organisms"; in the light of the recent researches in Endocrinology and Psychology, the disturbances of endocrinal or psychic action do surely deserve specific mention ; and so, the list will have to be added on, from time to time, while, as I have pointed out above, the Ayurvedic classification is so complete, comprehensive and universal that all causes that may become known in future can readily find niches where they will naturally go in. It, therefore, seems to me that, from the standpoint of sheer scientific reasoning the Ayurvedic classification is certainly more logical than the western one.

The Germ Theory of Disease and Theories of Immunity.

31. There seems to be a general idea that the germ-theory of disease which plays so important a part in modern western medicine is not known to Ayurveda ; I propose to examine the question in some detail as great importance seems to be attached to it in certain scientific circles : my argument will be that it is not true to say that the germ-theory of causation of disease was not known to Ayurveda, and that what is true is that it did not, and does not, occupy in Ayurveda the all-important position which it does in modern western medicine.

We have seen that, according to Ayurvedists, causation of disease is two-fold, viz., extrinsic (Bahya) and intrinsic (Abhyantara), and that parasitic germs are mentioned among the extrinsic causes, under the sub-head 'Aganthu,' along with Traumas and poisons of all kinds. There are two ways in which Aganthu diseases manifest themselves in the body, viz. (1) independently (Svatantrena) and (2) by infection or contagion (Sankramanena). Leprosy, other Kushtas and infectious diseases generally are instances of diseases conveyed by contagion. Pathogenic organisms (Krimis) are broadly divided into two classes, viz., those which are visible

to the naked eye and those which are not ; thus, Sushruta, in the chapter entitled Krimi-Roga-Pratisheda, speaks of twenty kinds of Krimis, of which the first thirteen kinds are mentioned as being visible to the naked eye, while Keshada, Romada and others are said to be not so visible. (के शादादयास्त्वदृश्यास्ते). Vaghbhata is also clear as to the causation of Kushtas by invisible organisms ; his significant reference to them as living Anoos (जन्तवो अणवः) is unmistakable, as also his statement that some of them are invisible because of their minuteness (सौक्ष्म्यात्केचिददर्शनाः) (Ashtanga-hridaya,—Nidanasthana, Chapter VII). But then, the question may be asked "How was the existence of germs known if they were invisible ?" The answer of the Ayurvedists is two-fold ; one answer is that the ancient seers had developed Divya Drishti (extended vision) which helped them to see directly (Pratyaksha), things invisible to ordinary vision ; instead of devising and perfecting instruments like the miscroscope, etc., external to themselves, they preferred to perfect their own bodily instruments like the senses ; this, as I have explained before, is the favourite method advocated and pursued by the ancient Hindus. The westerners generally do not believe in these methods. The Ayurvedists also say that the belief in the existence of invisible Krimis may be held by Anumana or logical inference, much as, I suppose, our western scientists believe in the germs of smallpox, measles, etc., although the most powerful miscroscopes and the most finished laboratory technique have so far failed to reveal them to our vision ; there is nothing unscientific about such belief ; in fact, lots of things in western medicine are only matters of such inference ; for instance, who has seen the complement (the very pivot of our theory of immunity) although we talk of removing it, fixing it, adding it, and so on ? However that may be, there is no denying the fact that Ayurveda distinctly recognises invisible organisms as being the causes of certain diseases—Leprosy, Kushtas, certain affections of the hair, nail and teeth, Erysepelas, Carbuncles and Sankramika rogas generally (contagious diseases). Sushruta also indicates clearly how contagion is spread from person to person in the case of Sankramika rogas : "By repeated bodily contact, by sharing the same food, bed or seat, and by the use of clothes, garlands or fragrant pastes used by another, such diseases like leprosy, certain fevers, consumption, ophthalmia and contagious diseases are conveyed from person to person." (Sushruta—Nidanasthana, Chapter V). While there can be no doubt that the existence of microscopic organisms as also their definite causative relationship to certain diseases was distinctly recognized by Ayurvedists, yet, it is clear that they did not attribute to germs the all-important role, assigned to them by orthodox western scientists of to-day ; they merely looked upon the germ as one among the many Aganthu causative factors, capable of producing disease, if the soil or field (Kshetra) was suitable for the growth of the germ-seed. It is when the bodily constitution was undermined by the non-observance of the Laws of Health such as Ritucharya (Hygienic rules for various seasons of the year), Dinacharya (Hygienic rules for daily conduct), Bramhacharya (Hygienic rules of celibacy or regulated sexual life) and so on, that the Kshetra (or soil) became suitable for the growth of germ-seeds, which were powerless to do any mischief in the case of those persons who led pure and healthy lives, because the Kshetra (or soil) was unsuitable for the germination and growth of the seed. Looked at from this standpoint, germ-seed is merely one among the many external causative factors of disease, like Trauma, poisons, lack of nutrition and so on, and there does not seem to be any special reason why the germ alone should be assigned a unique and all-important role, marking it off from other similar causative factors ; this fact is, in a way, recognized by Western Medicine also ; for, we still speak of large groups of diseases, like Deficiency diseases, Nutritional diseases, Tumours, Malformations, and so on, whose causation is not attributed to germs at all, although some germ-enthusiasts are hard at work to find out causative germs for all diseases in general ; it is because of the undue importance attached to germs, that it sometimes appears as though the germ theory was the whole of our Western theory of causation of diseases, while the fact is that it is but one among the many theories known to Western Medicine. Thus, lack of vitamines is held to give rise to a group of diseases like Rickets, Scurvy and Beri-Beri ; abnormalities of internal secretions, to other diseases, like Myxoedema, Addison's disease, Acromegaly, etc., then again we have Tumours, Malformations, etc., whose causation has not yet been satisfactorily known. Ayurveda prefers to have but one theory, viz.,

the Thri-dosha-theory, as sub-heads of which it has not only the germ-theory but also every other theory mentioned above. Hence, when people talk of 'the Thri-dosha-theory *versus* the germ-theory', they are making the mistake of comparing the whole with a part; then again, there seems to be such exaggerated views of 'germ-theory' that it is worth while re-emphasizing the fact that, even in its own line, the present germ-theory is not the last word in medicine and that it is applicable to only one group of diseases, although some people may entertain the hope that, some day it will be shown that the germs are the causes of all ailments that flesh is heir to; even in the case of diseases like cholera or tuberculosis, which are definitely stated to be due to specific bacteria, the chain of evidence is by no means so strong as it is generally stated to be. The germ-enthusiasts say that the cholera or tubercle bacterium is the causative agent, while the Ayurvedist will perhaps say that it is due to a particular variety of deranged doshas. Can the germ-enthusiast say definitely that the cholera vibrio or the tubercle bacillus is *everything* in the causation of cholera or tuberculosis? If one hundred people are exposed to the same infection, it does not follow that all will contract the disease; in addition to the bacteria, you require a particular condition of the tissues—the intestine, the lungs, etc., where the bacteria may thrive; some hold that there are yet other factors which should be present before a person can contract disease; let us for a moment, confine ourselves only to two factors, namely, the bacterium (which the germ-enthusiast calls the exciting cause) and the particular condition of the tissues (which he calls the predisposing cause). Now are we quite sure of the exact significance of these terms, 'exciting cause' and 'predisposing cause'? Certain germs may be living for years in our intestines on terms of neutrality or even of harmonious helpfulness; but the moment something untoward happens to the intestines, they may at once grow unfriendly and declare war. Now all these years the so-called exciting cause was there, but was powerless to excite. But the moment the intestines get injured in some way, our whilom friends became our foes. Why should we not call the injury to the intestines the exciting cause and the bacterium the predisposing cause? They are apparently like the seed and the soil, the father and the mother, which are both essential for the growth of an embryo. It seems as though the Thri-dosha-theory looks at the question more from the standpoint of the soil, while the germ-theory looks at it more from the standpoint of the seed. "Keep out the seed—away with all germs and you are safe"—that is the slogan of the germ-enthusiast. "It seems impracticable to keep out the germ-seeds which are ubiquitous. Therefore keep the soil in such a condition that no seed can grow, even if it gets in there." So urges the Ayurvedist.

Moreover, can we definitely say that the Ayurvedist is wrong, even if he chooses to assert that the bacteria are the *result*, rather than the *cause* of diseases? Sir James Goodheart, an honoured name wherever Western Medicine is known, stated in the course of his Harveian Oration for 1912: "Pathology is still shifting. We have not yet reached finality. Even *bacteria are probably results and not causes*." Then again we have it stated that, in certain cases of diseases definitely attributed to certain specific organisms, the causative germ may not at all be discovered; or the so-called pathogenic organism may be found in healthy persons and never cause disease in them. Influenza, with whose recent ravages we are all painfully familiar, is a good instance in point. Is it due to a germ, or is it not? At one time it was supposed that the influenza bacillus was the causative agent. Now it is known that, in a number of cases clinically classified as influenza, these bacilli do not occur; on the other hand, it may be freely found in the nose and throat of a good many healthy people, who may never suffer from influenza. Thus, influenza bacillus may exist and not produce any disease; on the other hand, it may be absent and we may still suffer from 'influenza'. This leads to the question "what is the exact significance of a term like influenza"? Does the name denote merely a group of clinical signs and symptoms? or does it signify that the cause is a specific germ? It is, of course, arguable that, if it is not this specific germ, it must be some others; it may be so; but does this not show that there is a tendency in some quarters to make a fetish of the germ theory? Does this not suggest that there is something slippery, something unsatisfactory, about it all? Medicine may be all right in its high Heavens, but all is not well with the germ-theory; it is admittedly not capable of explaining all that needs to be explained.

Strictly speaking, it is technically not a theory at all but only a hypothesis—one among the many, that are advanced to explain the causation of disease. Theory or hypothesis—that is however a matter of names ; and one need not quarrel over terminological inexactitudes, but when people, even scientifically trained people, talk of the germ-theory, as though it were the last word in this branch of medicine, one feels compelled to protest. Apart from the essentially unscientific nature of this attitude, there is the further danger that people of this way of thinking are easily liable to become scientific bigots, far more intolerant than even the bigots of religion. They deny themselves,—and what is worse, they deny others too, all liberty of thinking, in any other way than that indicated by their doxy. It is not right that any attempt should be made to influence the Committee to believe that it is *only* the germ-theory or any other particular theory of disease that embodies truth and all else is false ; it is just as well that we all realized the truth of the following statement that appeared in the leading column of the *Lancet* so long ago as 1909 :—" The bacterial theory of infectious diseases has been unchallenged for many years ; and though it has not been upset, yet it must be acknowledged that there are certain facts for which the theory does not account fully." If then we realize the weaknesses and imperfection of the germ-theory, does it not behove us to examine any other theory which purports to hold out better hopes ? It is only thus that scientific progress is possible. Open-mindedness, tolerance, and a readiness to examine the other side of every question—and few questions are without at least two sides—is the *sine qua non* of scientific progress. From what one may gather from the most recent Western literature on this subject, it seems as though there is now a distinct tendency to get away from the present position of attaching exaggerated importance to the germ-seeds and to take up instead, more or less the Ayurvedic position of attending to the 'soil' and keeping it in such a condition that the germ-seed cannot germinate or thrive therein. This new tendency is apparently gaining ground so fast that even the lay press has begun to interest itself in the matter, as may be gathered from the following extracts from a remarkable leading article in the *Times* (London) on the germ-theory of disease :— " A pamphlet has just been published officially in America in which it is shown how formidable are the ravages of influenza, and respiratory diseases in general, among workers in stone quarries and other dusty occupations. The figures, indeed, reveal the astonishing fact that dusty work increases by nearly fifty per cent the risk of death during winter epidemics. Those engaged in it are more susceptible to infection ; they are more liable to suffer complications, and their powers of recovery are restricted. It has already been sufficiently demonstrated that this is not a consequence of any irritation which dust may exercise locally ; the dust acts, it would rather appear, as a chemical poison. Thus, one affliction leads to another until there is produced a condition in which the human organism can no longer battle with its environment. This is but a fresh illustration of the view, which is gaining ground all over the world, that our earlier conceptions of diseases were much too simple. A decade ago it was confidently affirmed that if the 'seed' was present, the noxious plant could be counted on to grow ; in other words, that infection was the one essential preliminary to illness. This idea led to the active campaigns which were organized against various bacteria, the hope being that their abolition would result in the abolition of the disasters occasioned by them. Medicine has largely abandoned that hope, for it is now certain that the 'soil' as much as the 'seed' determines the outcome. There are, in fact, disease-proof individuals and other individuals whose susceptibility is much greater than normal. Susceptibility, too, can be won or lost. The minds of many workers are turning to this aspect of the subject, for it is already abundantly clear that control of human resistance offers a brighter future than direct attempts to eliminate disease. For example, it is easier to replace sandstone grinding-wheels by wheels made of emery than to stamp out the tubercle bacillus—yet the effect, it would seem, of the easy method is similar to that which the vastly difficult one might be expected to produce. It is easier, too, to supply children in winter with an adequate supply of butter or other animal fat than to sweep their nurseries clear of the germs of pneumonia or bronchitis. The butter in this case makes the 'soil' unsuitable for the 'seed'." It will thus be seen that the Ayurvedic conception of germ-caused diseases, as of diseases generally, is essentially a sound one, even in the light of the most recent findings of Western Science. Indeed when one goes

through the vast literature that is now gathering round endocrinology, deficiency, diseases and psycho-therapy, one cannot but be struck with the remarkable resemblance between the newer conception of disease and the ancient Ayurvedic one ; we have seen that the Ayurvedists have but one theory of disease, viz., that of the abnormality of dhatu-equilibrium ; all external causes of diseases, whether nutritional, microbic, toxic or psychic, become causes of disease only when, and to the extent, that they produce dhatu-morbidity. There is no room here for any exaggerated importance to be attached to germs or microbes, any more than to traumatic, nutritional, psychic or any other causative factor. The most recent researches of Western Science show that clinical cholera and clinical dysentery can be experimentally produced by certain substances chemically known as amines and it is considered probable that cholera and dysentery are caused by the cholera or dysentery microbes, only if and when they succeed in manufacturing these substances. If that be so, cholera and dysentery microbes can be considered to be causative factor of disease only when, and to the extent, that they produce these amines. If by any other cause (say by vitamine or endocrine deficiency, or even by emotional or psychic strain) the same amines are produced, then, cholera or dysentery may conceivably be caused, without the agency of their so-called causative microbes ; conceivably too, it is possible that, given a sufficiently bad condition of the stomach and intestines, one man's bread may literally (and not merely metaphorically) become another man's poison, and who knows, may even produce amines, capable of causing clinical cholera or dysentery. Looking at it in this way, we can no longer speak of the cholera or dysentery germ as the exciting or direct cause of cholera or dysentery, but will have to put the germ, in the same category as the so-called indirect or predisposing causes, such as a particular condition of stomach or intestines, a particular state of endocrinal balance, a particular psychic condition, and so on ; the direct cause in these cases will, of course, be the particular amine, however that may be produced. It may be, they are generally produced by the agency of germs ; but it is also conceivable that they may also be produced in other ways ; it is conceivable too that causation of other so-called 'microbic' diseases may stand on the same footing as that of cholera or dysentery. If that be so, then, to be strictly scientific, we have to say that the direct or exciting cause in these cases is not a particular microbe but the particular amine or any other chemical substance that may be incriminated in each case ; in other words, the direct cause is the vitiation of body fluids in a specific way by a specific chemical substance, which under suitable conditions may be produced by germs but may also be produced in other ways. Looking at it in this way, are we not very near the Ayurvedic view which holds that all external causes of diseases (bahya-hetu) whether traumatic, toxic, emotional, psychic or any other, produce diseases only when, and to the extent, that they bring about increase or decrease (vriddhi or kshaya) in the substance of thri-dhatu ? Is not the line of thought underlying this view essentially the same as what modern research seems to me to be leading us into viz., that all causes of disease whether injuries, microbes, defective nutrition, vitamine or endocrine deficiency, and even emotional and psychic stresses produce diseases only when, and to the extent, that they bring about the formation of amines or any other substance of a similar kind ? However that may be, there is no doubt that the findings of modern research are compelling us to so alter our view-point in respect of the germ-theory of diseases as to do away with the exaggerated and exclusive importance attached hitherto to the microbic factor of diseases. The following thoughtful and significant reflections from an editorial in a recent issue (November 1922) of the *Indian Medical Gazette* may profitably be extracted here: "In cholera, the cholera vibrio produces an amine, in the same way as it attacks the amino-acid tryptophane to form indol; and, as shown below, the symptoms of cholera can be reproduced in experimental animals with this isolated amine.

In brief in both Shiga dysentery and cholera everything appears to depend upon the substrate upon which the bacteria act. Hitherto we have been accustomed to classify bacteria by their morphological characters. In future more attention should be paid to what bacteria do than to what they are. This has long been recognized by agricultural and economic bacteriologists, but its importance has not been sufficiently realized in medicine. Whether an attack of Shiga dysentery or an attack of

cholera is mild or is very severe and even fatal may all depend upon the characters of the substrate, i.e., the intestinal contents. If abundance of amino-acids is present, i.e., abundance of the products of proteid digestion, toxic amines will be produced in abundance and the disease will be very severe. If the diet has been of such a character as to leave but little proteid residues in the intestine the bacteria will produce but little toxic amines, and the disease be of a mild character. A further and exceedingly important point is the degree of hydrogen—in concentration in the culture medium or intestinal contents. It is also interesting to note how modern researches in endocrinology and psycho-therapy are leading us to a similar change in the conception of the Germ-theory of disease ; and what is more interesting, they lead us to views, regarding the mutual inter-relationship of physical, emotional and mental phenomena (both normal and morbid) which are essentially similar to the ancient Ayurvedic conception, as may be seen from the following quotations : " Invasion by bacteria and their toxins may prematurely exhaust the endocrine glands, or endogenous poisons may produce a similar effect ; metabolism becomes balanced on a razor edge, the sport of every wind that blows. Nervous shocks and strains excite a reaction of the sympathetic nervous system, and, through it, of its associated chain of endocrine glands, with consequent exhaustion of them. And these two sources of endocrine exhaustion may interact, so that a psychic conflict may be produced because the body cannot adjust itself to a difficult environment largely because of an endocrine deficiency. Thus the two newest methods in medicine, psycho-therapy and endocrinology, become not opposed but different aspects of the same problem . . . We may extend to all the endocrines McCarrison's statement that the thyroid gland is affected alike by toxic, nutritional and psychic factors, and is particularly likely to be injuriously influenced if more than one such factor is overtaking it. The influence of toxins can be more precisely understood now that Cramer has demonstrated the mechanism. His work also explains how a sympathitico-tonic reacts vigorously to infection, whereas a vagotonic does not, and, indeed, shows an abnormal sensitiveness to many foreign proteins, whether bacterial or not. Thus the same toxin may excite asthma in the latter type and excessive fever followed by an exhaustion neurosis in the former. (It is difficult not to see the close analogy between the above division of persons into vagotonics and sympathitico-tonics, and the Ayurvedic division into Vatalas, Pithalas and Sheleshmalas, each group reacting in its own way to environmental changes). " The nutritional factor would seem to be chiefly associated with lack of vitamines which, as McCarrison has shown, causes enlargement of the adrenals and pituitary while causing some atrophy of the other endocrine glands. In pellagra we have a striking example of a deficiency disease producing actual structural changes in the adrenals and sympathetic ganglia and mental deterioration. In this connexion it is of great interest to note that pellagra is much more likely to affect defeated than victorious soldiers, showing the influence of depressing emotion in permitting a disease, directly due to lack of assimilable protein to obtain its hold on the endocrine system . . . . . It is to fear, pain and rage that the sympathetic particularly reacts since these are the stimuli which normally lead to those violent motor responses for which sympathetic action prepares the way . . . . The effect of fear in producing hyperthyroidism was well shown during the air-raids on London. Indeed the air-raids were almost an ' acid test ' of race. An uncontrollable impulse to flight from London or into the tubes was almost diagnostic of Semitic origin. More self-controlled people, who nevertheless suffered acutely, repressed their impulses from the motor to the vegetative level and received their reward in hyperthyroidism, amounting in some cases to Grave's disease. Similar outbreaks of this disease followed the San Francisco earthquake and the Kishineff massacres " (Professor W. Langdon Brown in the Journal of Psychology—Medical Section—Volume II, Part I, October 1921, pages 6–11). If fear is now known to be a causative factor in such an obvious ' physical ' ailment like Grave's disease, then there is no reason why other emotional or psychic strains should not be causative factors in other physical diseases ; in any case, it would be rash in the light of modern research, to speak of Ayurveda, as being unscientific, because it mentions, unethical conduct among causative factors of physical diseases—such conduct, for instance, as the exhibition of anger, rage, fright, hatred, cupidity, jealousy, and so on. If we mean to be scientific, we may test these statements, accept them if they work true and reject them if they do not : but, let us not condemn them without

taking any trouble to test them, merely because they go against our cherished notion that physical and psychical phenomena are independent of each other. That Modern Western Science itself is rapidly coming round to the ancient Hindu view may be gathered from the following remarks of Dr. Leonard Williams, one of the foremost among our renowned British Physicians: " Among the large number of those who now interest themselves in psychology there is, or has been, an impression, amounting almost to an article of faith, that the operations of the mind are independent of physical phenomena. Not only is the impression an erroneous one, but it is almost the exact reverse of the truth: for the operations of the mind are dependent both actually and potentially upon causes which are primarily physical. By this I do not mean merely such obvious considerations as that circulating blood is necessary to the process of thinking. I mean that mind itself is primarily physical, and that what we call conscious thought is, in its inception, action, and make up, fundamentally physical and chemical. . . . . I have asked you to follow me thus far in order to show that the term unconscious mind is not a mere abstraction, that the thing has not only a name, but a local habitation, and that the said local habitation is in the innermost recesses of our most intimate being. In order to dot the i's and cross the t's of this wholly heterodox proposition, let me give one more instance. When a microbic army gains a footing in the tissues the defensive phagocytes are immediately mobilised, and proceed to make an orderly advance against the invader. Simultaneously the temperature of the whole body is raised—we call it a fever—with a view of paralysing the invaders and facilitating the work of defensive destruction. No one surely can deny that this complicated and effective plan of campaign could be the result of anything but hard thinking, and it is quite obvious that the thinking is done, not by the brain, which is blissfully and disdainfully ignorant of such material happenings, but by the vegetative nervous system acting in conjunction with the unconscious mind. Let us now look a little more closely into the matter and enquire what are the motors of this unconscious mind. We know that it resides in the ganglion cells, in the viscera and the ductless glands, but what part respectively do these separate portions play? Well, the answer is that while the time is not yet ripe for dogmatic statement, there is a large mass of evidence which goes to show that ductless glands, the endocrines, with their essences, their hormones as they are called, constitute the mainspring of this surprising mechanism. Nor does the importance of the endocrines stop here, for, according to the exact proportion in which their essences are admixed in your blood, you are tall or short, dark or fair, phlegmatic or choleric, saint or sinner, sexual, homo-sexual or sexless, male or female. Now if they have these powers, and they have, it is not too great a flight of imagination to believe that they dominate the unconscious mind." (British Journal of Psychology, Volume II, Part IV, pages 259–262.)

Do not these statements read so Ayurvedic, alike in their enunciation of what really looks like the exploded humoral theory as also in the formulation of the doctrine of the interdependence of mind and body? If these views of Dr. Leonard Williams are scientific (and nobody seems so far to have ventured to say 'no', notwithstanding the fact that, as he himself admits, his views are really heterodox) then, it cannot be that the Ayurvedic Thri-dhatu theory is the exploded or unscientific superstition that some followers of western medicine take it to be. On the contrary, it seems to me that modern research is inevitably driving us to recognise the 'humoral theory' in some form or other, as may be seen from the following:—" The cellular theory of immunity was advanced by Metchnikoff as the result of extensive observations on infection occurring in the lower forms of living animals. In these studies he was able to demonstrate that a phenomenon common to all such infections was the ingestion and subsequent destruction of the invading parasites by certain wandering cells present in the tissues, and he believed that this ingesting action, or phagocytosis, was the essential factor in combating the microbial attack.

" The theories put forward by the humoral school were based on the observation made by Nuttall, that normal blood possessed the power of destroying bacteria, and that this power remained when the plasma or serum was freed from all cellular, elements. The attitude adopted by Buchner, Flugge, Nuttall, and other exponents of the humoral school, was that Metchnikoff and his co-workers had never conclusively demonstrated the phagocytosis of living organisms, and they suggested that the

essential nature of this process was the removal of bacteria which were already killed or injured by the body fluids. The reply of the upholders of the cellular doctrine was that, in so far as the body fluids possessed anti-bacterial properties, they derived them from substances liberated by the phagocytes themselves.

"It is impossible in a short summary such as the present to deal with the stages of this controversy on any historical basis, or to discuss at length the secondary disputes that arose, during the researches into the properties of the blood-serum and body fluids, between Ehrlich and his school on the one hand, and Bordet and his followers on the other. . . . . . . Already certain observers have put forward the view that all bacterial disease is essentially an intoxication with proteid split products, the individual phenomena displayed depending rather on the localization and mode of entry of the organisms than on any differences in the toxines. According to this view, the bacteria do not themselves contain any true toxines, the toxic substance being produced by the action of the body fluids and cells on the bacterial protein." (Green's Pathology—12th Edition (1920), pages 160, 161 and 186.) At this rate, it will not be a matter for surprise, if our western scientists should soon be talking of transmutation of microbes as a scientific fact, even as they have now begun to speak of the transmutation of elements, not as a discredited fiction propounded by the much maligned alchemists but as an admitted fact demonstrated by our much-honoured chemists. Meantime, the theories of our western brothers are still in the melting pot; in what shape they will emerge, time alone can show; there can however be no manner of doubt that at present 'our conceptions of the factors involved in infection and resistance or incomplete and in many cases inconclusive' (Ibid., page 187). It is worth while emphasising this fact, because it is still authoritatively stated that the Thri-dosha theory cannot hold its own against the conceptions of modern pathology as though the latter were complete and conclusive. We are told that we have made phenomenal progress in this direction during the last few decades; undoubtedly we have had a succession of many brilliant researchers who have toiled in this field and succeeded in collecting a very large number of facts on the lines that the immortal Darwin did; we have alternatively set up new theories and demolished them, just as Lamarckians, Darwinians, Weismanians, Neo-Darwinians and Mendelians have successively demolished the edifices of one another; we have sometimes made the comparatively simple appear incomprehensibly complex; and in some quarters, there has been a fatal delusion about a phenomena being explained merely by the creation of jaw-breaking neologisms, which in reality, serve more to cloud than to illumine the problem that is at issue. The net result of all this 'progress', is that substantially, we have not gone much ahead; this does not mean, of course, that because a theory had to be given up, the labours of the brilliant exponent of the theory were of no account; the world would have been very much the poorer if the immortal Darwin had not laboured and enunciated his theory of the origin of species, although it is now known that it has to be largely restated. As Prof. Bateson said in his Presidential address to the British Association in 1914 'We go to Darwin for his incomparable collection of facts. We would fain emulate his scholarship, his width and his power of exposition, but to us, he speaks no more with philosophic authority.' The various points which I have indicated above regarding the extent of 'progress' made in the western conceptions of 'immunity' are well set forth in a rather trenchant criticism of Morley Roberts which I cite below:—

"When the late Sir William Osler jested at the expense of the new school of theorizing biologists who strive to perpetuate in peculiar neologisms highly doubtful microscopic observations, he drew a caricature of their specialized language, which had considerable merit. But while he fought against specialism run mad in verbal constructions, which at once stimulate knowledge and obscure it, he might just as well have taken his examples from the armoury of certain bacteriologists. If, in the phenomena of mitosis, 'the idiosphaerosome differentiates into an idiocrytosome and an idiocalyptosome, both surrounded by the idiosphaerotheca,' such a passage is assuredly not more curious to observe than many which cram a hundred Greek and Latin derivatives and hybrids into a bacteriological 'explanation.' Although any science seems liable to fall into the practical fallacy of thinking a thing can be explained without reference or relation to others, bacteriology appears least immune to

this logical disorder of thought. . . . . It is due to such habits of thought which now appear to be confirmed, that there are fewer subjects coming under the heads of general physiology and bio-chemistry in a greater state of confusion than 'immunity.' This result may, perhaps, be due to a false belief in the profundity of the Teutonic mind which, as Benjamin Moore pointed out, when commenting on an original communication of mine in the British Medical Journal, had seized upon French work, and fogged it in its best later manner. It is indeed to Weismann and Ehrlich that the worst results can be directly attributed, for just as the biologist explained heredity by saying that it happened owing to the nature of the organism, that is, to ids, determinants, and biophors, and the like, so Ehrlich in his side-chain theory invented a marvellous verbal machinery of immunization, every word of which contained a 'circulus in definiendo'. To the practical English worker, who usually distrusts the theoretic intellect, as if a general idea were a proof of original sin unless it comes to him from abroad, this scheme was a godsend. It appeared to save thought, and instead of examining it critically he has patched it up with new words as they seemed to be wanted, just as the Ptolemaic astronomy added eccentric to eccentric and epicycle to epicycle in order to represent the planetary motions. And yet the whole theory is obviously false. To this every modern physiologist would subscribe, seeing that it depends for its validity on the supposition that life itself is the result of giant molecules. It is, of course, wrong to infer that particular statements are not true if rightly interpreted. 'Antigens' certainly produce specific 'antibodies' as definite responses to the chemical nature of the 'antigen' but there is no reason why this should not have been expressed in terms implying that any foreign or hostile elements introduced into an organism tended to produce definite reactions of a protective nature. To invent or to lead to the invention of a jargon containing such words as haptophore, ergophore, complementophilogen, amboceptors, agglutinins, precipitins, bacteriolysins, opsonins, syntoxoid, and so on, which again bred other equally futile words of the same kind, was but to stultify real explanation, and to cloud perception of the actual facts. When all this was hung upon the giant molecule, a mere guess of Verworn's, the structure naturally enough came to the ground. But, though the whole theory of side-chains, except so far as they are mere chemical phenomena, has been discredited, there are yet able bacteriologists who continue to teach it as if Ehrlich were accepted gospel. On my inquiring why they did so, when they knew that the theory was no longer held by any physiologist, two or three well-known men replied that it was useful to students as a framework on which to hang facts. To this it might be objected that, though a hat-rack is useful to hang hats on, yet it is not the place to hang hundred weights, and that when the hat-rack has the addtional disadvantage of being an imaginary one, there will be more than common difficulties in the way of useful arrangement. A compound may, perhaps, be cleared of cobras by a mongoose; but no competent zoologist will employ the 'imaginary mongoose' of fable at the task. To teach what is not true merely as mnemonics is to ignore the truth that any fact falsely classified is not only a danger in practice but leads to false views with regard to other sciences, to say nothing of the distrust of the teacher evoked in the intelligent student who does not swallow what is offered to him without producing an 'anti-body' to the professional 'antigen.' For such a student may have acquired some smattering of colloids, and have actually begun to see, as Moore wrote, that the pioneer work of the French 'had been burdened with the intolerable weight of a useless philosophy of jangling terms for a type of re-action well-known in colloidal chemistry' . . . . . It certainly appears that the terms employed in general physiology should be sufficient for bacteriology, and observers of fresh phenomena ought to be chary of coining new words. Their hasty multiplication usually implies some additional hypothesis. It is characteristic of a false explanation to require an increasing number of sub-hypotheses while a real one abolishes a multitude of superfluous terms, and, displaying a phenomenon as the function of known variables, by such a disclosure, becomes essentially a simplification . . . It has only been through an immense period of evolution that the proteins and other food elements have come to stimulate the production of specific enzymes or catalysts, and it is within every clinician's knowledge that in certain conditions of health these necessary reactions do not occur. When that is so, nutrition fails, and food becomes a poison. If this is correct, and it cannot be doubted, nutrition must be regarded as

an actual process of real immunization, in which secondary and simpler products are used by the organism as food." It seems to me that there is a remarkable resemblance between the line of thinking enunciated in the above notion of all physiological as well as pathological processes (including immunity) being caused by the agency of certain chemical substances, and that which underlies the Ayuvedic conception of the same processes being effected by the agency of Thri-dhatu substances; in the one case, the activators may be called Catylysts, Hormones, enzymes and so on; in the other, they may have the name of Vata, Pittha and Kapha; but, to my mind, there seems to be an essential similarity, if not identity, between these two modes of thought—a similarity, which makes me hope that if we could but fraternise and exchange views, our joint labours may make for clearer notions in the realm of both Physiology and Pathology.

CHAPTER VI.—DIAGNOSIS AND TREATMENT.

Diagnostic Methods.

32. The general methods of diagnosis pursued by Ayurvedists are more or less similar to those pursued by modern Western Doctors, as may be gathered from the following extracts taken from the written evidences of Doctors Mahamahopadhyaya Kaviraj Gananatha Sen, M.A., L.M.S., and Yamini Bhushan Roy, M.A., M.B. &. C.M., F.C.U., whose words are of special value, as coming from experts, learned in both Western Medicine and Ayurveda :—*Principles and Methods of Diagnosis.* Says Sushruta ;—There are six ways or agencies through which diseases can be definitely known—by the five senses and by interrogation. (Sutrasthan—Chapter XI.) This statement is followed by instances of the various phases of diseases which can be known by these agencies. Hence the above principles reduce themselves to the following methods of diagnosis :—

(i) *Sravani Pareeksha* or Auscultation: various sounds heard in diseases of the chest as also the crepitus of fracture, have been mentioned as amenable to examination by the sense of hearing. Perhaps the auscultation employed was direct (as it was before the invention of the Stethoscope by Lennec in Europe) but the principle was clearly recognised.

(ii) *Twachi Pareeksha*, or Touch and palpation, by which are known heat and cold, size, position and consistency of organs, etc.

The pulse, of course, comes under the same heading but clinical observations and minute analyses of the pulse-waves as felt at the wrist, appear to have been made with great success from the clinical point of view. This subject in fact became a separate study and the success of the Ayurvedic physicians in surmising and foretelling certain facts and symptoms and even the probable time of death from pulse alone is still proverbial.

By means of sphygmographic tracings, I am endeavouring to give this subject a definite and demonstrable shape and it would be worth the while of any clinician to study the subject thoroughly from the view-point of Ayurvedic clinicians.

(iii) *Chakshushee Pareeksha* or inspection, by which are known position, gait, colour, contour, etc.

(iv) *Ghrani Pareeksha* or examination by the smell, by which is known the smell of discharges, pus, etc.

(v) *Rasani Pareeksha* or examination by the sense of taste (sushruta). Charaka takes much objection to this method of diagnosis and the method is now rightly obsolete. We may note, however, that even at the present day, this method of examination survives in certain medico-legal examinations (Staas process).

In this connexion, it may be noted that various instruments (yantras) like several kinds of specula, sounds, catheters, etc., were employed in diagnosis (vide Sushruta, Sutra, Chapter VII and Vagbhat's Ashtangahridaya Sutra, Chapter XXV). The latter describes a form of speculum which is identical with Allingham's four-bladed speculum.

(vi) The sixth method of diagnosis is by questions—*interrogation.* The history and some subjective and objective symptoms are ascertained by this method.

"Health and ill-health depends respectively upon the normal (prakriti) and morbid (vikriti) condition of the three doshas—Vata, Pittha and Kapha; the normal habitat of these three doshas, as also the special features of their normal conditions and the symptomatology of their morbid conditions are all clearly described in our books; and these are the fundamentals, with which every real Ayurvedic practitioner is and must be quite familiar. From the clinical experience of ages recorded in our books and added on from time to time by various acute observers, we are also able to diagnose the exact nature of the doshic disturbance whether it is essentially a morbidity of one, two or three doshas, whether it indicates their increase (vriddhi) or decrease (Kshaya), whether it is their sama (attended with digestive disturbance) or nirama condition, and so on.

The teachings of our Rishis also help us in diagnosing which of the seven dhatus (blood, muscle, fat, etc.) is primarily at fault; once a knowledge of the morbid doshas and dhatus is gained, the rest is easy." [*From Dr. Gananatha Sen's written evidence.*]

The following is from the written evidence of Dr. Yamini Bhushan Roy:—

"The diagnosis of diseases is six-fold—by means of the five senses and also by interrogation. Western Medicine, looking at things from without, designates its diagnostic methods by the terms inspection, palpitation, etc., but, our ancients, ever looking at things from within, referred them all to the five senses and to interrogation, which (interrogation) was a very comprehensive and highly suggestive method, including, as it did, references to all the numerous relevant factors of diseases such as desa (country), kala (time or seasons), jati (tribe), satmya (compatibility, that is to say, whether correlation with particular climate, country, season, previous illness, tribal peculiarities, etc., is or is not compatible to patient), athanka (the mode of onset), vedana samuchraya (the mode of development of ailment), balam (constitutional strength), deepagnitha (state of digestion and assimilation) mutra-pureeshadi (state of urine and fæces, etc.,) and so on. If any physician of any climate or country follows the detailed maxims laid down for the thorough examination of not only the disease, but also of the patient, which examination was particularly insisted on by our sages, as being essential both for diagnosis and treatment, he is sure to do well by his patient and bring credit to his science and art."

I may also add that the examination of the pulse seems to have been cultivated with special assiduity by the followers of the Tamil Siddha Vaidya system, which has a rich and extensive literature on the subject. Similarly, the examination of urine seems to be a speciality with the Unani doctors, some of whom claim to be able to diagnose by this method not only particular states of ill-health but also such features as sex, pregnancy and so on—a claim which some people say is manifestly impossible to allow; but is the claim really so impossible as it may appear at first sight, if we bear in mind that Abderhalden and other Western scientists also claim that pregnancy can be diagnosed by the presence in the blood-serum of an enzyme capable of digesting placental proteins? If it is possible to diagnose pregnancy by the examination of blood-serum, then why should it be impossible to diagnose the same by the examination of urine? So much for diagnostic methods. As for case-taking and investigation of the various data of diagnosis, they are all conceived in a strictly scientific spirit and show a close resemblance in many points to modern western conceptions, as may be seen from the following summary.

METHODS OF INVESTIGATION.

33. The methods of investigation are usually described under the following five heads:—

(1) *Nidana*.—First comes the investigation of 'nidana' or the root-cause of diseases; that is to say, of the particular causative indiscretion, such as, bad food, bad water, indulgences, excesses and the like. This gives as clues to diagnosis and prognosis. But, as one nidana may possibly be at the root of more than one disease, Nidana alone cannot help us to diagnose diseases.

(2) *Purvarupa.*—Next we proceed to investigate purvarupa, or the prodromata. This investigation helps the physician to correlate particular doshic derangement with a particular group of prodromata and also gives him some clue to prognosis.

(3) *Rupa.*—Next comes the investigation of rupa or symptomatology, by means of which the physician is enabled to judge the special features of the developed stage of disease of doshas, dushya etc., which indicate whether we have to deal with morbidity of one dosha, two doshas (dwandva), or all the three (sannipata); whether it is an affection of rasa, rakta, mamsa, asthi, or any other dhatu or dushya, and so on. The study of signs and symptoms was appearently pursued by ayurvedists with remarkable diligence and skill. The richness of material available in this field is so vast that it is a thousand pities we do not know more about it. When one goes through some of the ancient medical classics, which are happily still extant, one cannot but feel that they are obviously the works of master-minds gifted with marvellous powers of observation and expression.

(4) *Upashaya.*—Next in order comes what is termed Upashaya, which is really a form of diagnosis by applied therapeutics, a measure not unknown to Western medicine. Let us say, the question is whether a particular ailment is due to the derangement of vata. We are in doubt. We then prescribe a diet, exercise or any other remedial measure known to cure this suspected derangement, which is then either ameliorated or aggravated. If it is ameliorated, then the hypotheticated proposition is confirmed. If not, it is rejected.

(5) *Samprapthi.*—Finally, we have samprapthi, a term which is generally translated as pathology; but it is really much more, because its investigation is conducted with a special eye to prognosis. An illustration may perhaps render the meaning clear. Let us say, we have a group of signs and symptoms from which the trained doctors would infer typhoid fever; to the Ayurvedist its samprapthi would have reference to such consideration as the following:—

Which of the eight kinds of fevers does this come under?

What is the measure of the deranged doshas?

Does it belong to this, that or the other type?

Is the disease primary or secondary?

Is it benign or malignant; curable or incurable or curable with difficulty; totally curable or partially curable?

Is the time of its occurrence favourable or unfavourable—for example, the beginning or ending of an epidemic or a periodical or seasonal recurrence, and the like?

The learned Yamini Bhushana Roy, in referring to this subject, states thus:—
"Then we come to samprapthi (or pathology) of disease, which has reference to the following features:—

(1) *Sankya or number.*—That is to say, the number of varieties or types in which diseases may manifest themselves: thus—fevers in eight types, gulmas in five, leprosy in seven, and so on.

(2) *Pradhanya or predominance.*—That is, the predominance of particular dosha or doshas.

(3) *Vidhi or order or classification*—that is, with reference to either the two-fold causes, viz., idiopathic (nija) or traumopathic (aganthuka), or to the three-fold classification of tridosha, or to the four-fold classification of curable, incurable, mild and severe types.

(4) *Vikalpa or possible alternatives*—that is, the ascertainment of the measure in which the doshas are excited in the combined doshic triad.

(5) *Time of energising (balakala).*—This is with reference to the time-factor, which energises diseases and makes them either atibala, madhyabala or heenabalai (severe, moderate or mild), e.g., the seasons, the day, the night, the hour of eating, etc.

In studying Samprapthi, we study the following morbid phenomena which the doshas undergo:—

(1) *Sanchaya*, or accumulation of doshas corresponds to the 1st kriyakala (period of activity).

(2) *Prakopa* or excitation corresponds to the second kriyakala.

(3) *Prasara* or extension corresponds to the third kriyakala.

(4) *Sthana samshraya* or specific location—corresponds to the fourth kriyakala. When the excited doshas extend from their seats or origin and become localized in other seats, they cause specific diseases of the parts so affected e.g., 'Diseases of stomach', 'diseases of bladder', 'diseases of anal region', 'diseases of testes', 'diseases of blood, skin, muscles or other tissues', or diseases of all organs as a whole. This condition corresponds as has been mentioned already to 'purvarup' or stage of prodromata (or incubation).

(5) *Vyakthi* or manifestation—corresponds to the fifth kriyakala. This is the stage when rupa (or symptomatology of diseases) can be studied.

(6) *Bheda* or variation—corresponds to the sixth kriyakala. This is the stage when diseases become chronic, incurable, etc.

"From what has been stated above it should be clear that our system is perfectly scientific and can stand the test of any scientific criticism, provided that our critics take the trouble to acquaint themselves with what they are criticising,—doubtless an elementary qualification demanded of every critic in other branches of technical study but somehow or other totally neglected by some professors who think it is apparently the correct thing to judge Ayurveda from ignorance-born prejudice or bigotry; the persons best qualified to say whether or not Ayurveda can stand the test of modern scientific criticism are obviously those who are versed both in Ayurveda and Modern Western Medical Science—not those who are ignorant of Ayurveda, as some critics in the past undoubtedly were, however high their professions may be in western medicine. By this I clearly mean that western scientific men should first learn the Sanskrit language and then study Ayurveda for some years under one of our competent acharyas; then only they may think of criticising Ayurveda; otherwise, their criticism is worthless and cannot claim any authority; such critics will only succeed in proclaiming to the world their unscientific attitude. For the credit of Ayurveda, be it said, that no professor of Ayurveda has ever been guilty of such infamous procedure as criticising the Western Medical Science without studying it; in my opinion both systems are useful and worthy of study; to shut ourselves from knowledge and truth (whether it comes from the East or the West) is, in my view, a sign of barbarity. No wonder that ignorant critics frequently succeed (albeit unconsciously) not only in suppressing the truth (suppressio veri) but also in suggesting falsehood (suggestio falsi) as, for example, in suggesting that our tridosh theory is the same as some 'humoral theory' of the Greeks." Strong criticism is this; but it does seem to me the provocation is from those who said that Ayurveda was unscientific.

The Bases of treatment—Accurate Diagnosis and Prognosis.

34. It is however when we come to the consideration of the principles of Ayurvedic treatment that one may almost be startled to find the high degree of scientific excellence, which Ayurveda seems to have reached centuries ago.

It is stated that Dr. J. H. Clarke, M.D., of Philadelphia was so impressed with the principles of Ayurvedic treatment that, after going through the English translation of Charaka, he wrote thus:—"As I go over each fasciculus, I arrive at one conclusion and that is this—If the physicians of the present day would drop from the Pharmacopœia all the modern drugs and chemicals and treat their patients according to the method of Charaka, there would be less work for the undertakers and fewer chronic invalids in the world". These are undoubtedly the words of an enthusiast whose zeal and admiration for Ayurveda has apparently made him indulge somewhat in the language of hyperbole, both in his appreciation of Ayurveda and depreciation of the Western System; but when one finds that Ayurveda excels, just in respect of those very topics, where, judging from the recent writings of certain distinguished Western authorities themselves, modern medicine is found to have gone astray, then, one can easily understand how a little exaggeration is not altogether unnatural. Looking at it in this way, it may perhaps be better, if I first set down what these vital defects of modern Western medicine are, in respect of which Ayurveda excels, so that, by such a comparison, we may be able to understand the true significance of the remarks of people like Dr. Clarke better. According to Sir James Mackenzie one of the foremost among British researchers and clinicians, and an authority,

justly held in high esteem wherever Western medicine is known, the vital defects of the modern system of treatment are mainly along three lines—(1) failure to diagnose and treat diseases at their 'predisposing and early stages,' (2) failure to assess the prognostic value of every diagnostic feature and the consequent bungling in laying down a truly adequate and scientific line of treatment and (3) the exaggerated importance attached to the laboratory methods of diagnosis, to the detriment of the clinical, with the result that diagnosis in Western medicine is fast becoming a hopelessly and even impossibly complex achievement of an ever-increasing number of super-specialists and laboratory experts of all kinds.

Below I give extracts from the recent writings of Sir James Mackenzie to show how Western medicine is, according to him, blundering along the three lines mentioned above; incidentally, it may also be added that Sir Mackenzie is himself a recognized prince among the most eminent of our laboratory experts—a fact which adds greatly to the value and significance of his pointed criticism deploring the exaggerated importance attached nowadays to laboratory methods:—

"Medicine has advanced so far that, for the study of disease after the patient has died, we find institutions magnificently equipped, presided over by men of great experience and training; for patients suffering from the advanced stages of disease, we have great hospitals, with staffs of skilled physicians, surgeons and specialists. If we seek to find out 'what are the facilities offered for the detection and cure of disease in the stage when it has not damaged the tissues,' we discover that there is little consideration given to this aspect of the matter. It is indeed instructive to reflect that, while men undergo a long and special training to enable them to recognize the appearance of disease after the patient has died, and other men undergo equally careful training to enable them to recognize disease after it has damaged the tissues, few or no attempts are made to train men for the detection of the disease when there is a hope of cure. There is, it is true, an impression that the methods of diagnosis are so developed that disease is now recognized at the earliest stage at which it is humanly possible to recognize it, and that any phenomena that occur earlier are so vague and indefinite that no clear information can be obtained from them. This view is not justified. There are evidences which would surely indicate the nature of the disease in its earliest stages, were we capable of detecting them; the reason why we fail to detect these evidences is that medical knowledge has not yet progressed far enough to inform us how to set about finding them. . . The progress of medicine is being hampered by an imperfect conception of the aims of medicine and a consequent employment of methods that fail to advance the subject. So far, the greatest endeavours have been spent in elucidating the later stages of disease, and progress demands that the predisposing and early stages should be investigated with equal thoroughness and energy. In order to do this other fields must be explored, other methods used, and other individuals employed, than have served the purpose of investigation and teaching in the past . . . Prognosis has hitherto been chiefly studied in advanced disease, and a considerable amount of reliable information has been accumulated. But there is a wide field requiring further investigation, particularly in regard to symptoms, before much damage is done . . . . When a true insight is obtained into what medical science means, it will be found that the great obstacle to progress is a lack of understanding of prognosis. Up to thirty or forty years ago the subject was making progress slowly and crudely but definitely. During the last quarter of a century it has got such a set-back that to-day its importance is not understood, the principle which should guide to its knowledge is not appreciated, and the individual whose opportunities afford the means of acquiring this knowledge is not recognized . . . It will be seen that a matter like prognosis, so essential to medical practice, requires methods and opportunities of a particular kind, but so backward is the state of medicine that neither the methods for acquiring this knowledge nor the value of the knowledge when acquired is understood . . . The lack of understanding of the importance of prognosis comes out in striking and curious ways. A great many people have been engaged in the investigation of irregular heart action, and much of the mechanism has been revealed; but they stop there, being content with the recognition of the different forms of abnormal heart action. To me, on the other hand, this research was but a means to

an end, not the end itself, the end being the prognostic significance of the irregularities. Here is a curious matter. I have received a meed of praise far beyond my deserts for the employment of mechanical methods in general practice. Indeed I do not doubt that is the reason why I have been honoured to address you to-day, and I have been told that this was the reason I was made F.R.S. That implies a limited outlook upon medicine. The use of the graphic methods was but child's play to the search for the significance of irregular heart action . . . Did it ever occur to you why records of patients are kept? Every hospital keeps them as a routine, but it is doubtful if the reasons are understood. The chief purpose of records is to lay the basis of prognosis, that is, to obtain a knowledge of a patient's complaint from data drawn from patients presenting similar symptoms whose progress has been observed. The real purpose of records is to show this progress. They can be used for other purposes, but these are subsidiary. To-day they fail in usefulness because of the absence of a knowledge of prognosis . . . The records taken to-day are not a bit more helpful than those taken fifty years ago. I know this will be disputed, for there is a belief that medicine has made such gigantic strides that signs and symptoms are now detected that were never before recognized. Thus a physician who has had some laboratory training in biochemistry includes in his notes the chemical constitution of some fluid. Another who has studied the blood will reflect his speciality in his records. If he has studied bacteriology the records will describe the various bacteria found while blood-pressure records and electro-cardiograms will show the bent of others, and so on. Each one finds his justification in the belief that in recording facts he is adding to the sum of human knowledge, whereas he is but adding to that enormous mass of chaotic details which darkens and confuses medicine to-day. The advances that have been made in special branches, particularly those pursued in laboratories, and by the use of mechanical devices, are all reflected in the field of clinical medicine. In an attempt to be up-to-date physicians use the methods of these auxiliary branches, so that clinical medicine toils laboriously in their rear, and to a great extent becomes subservient to them. It should be realized, and should be strongly and persistently insisted upon, that all these special methods fall far short of the ideal of what is wanted in clinical medicine, and that the pursuit of clinical medicine involves problems, peculiar to itself, which none of these methods can ever hope to solve. There is not a single mechanical or laboratory method ever introduced but has had an extremely limited sphere of usefulness. Time and again great expectations have been raised on the announcement of some wonderful discovery that was going to have a revolutionary effect upon clinical medicine, but in every case, as time went on, when its sphere of usefulness came to be recognized, it was found to be a very limited one. The impression that the results obtained by a mechanical method are more reliable and more scientific than those obtained by the use of the unaided senses, is but a belief based on a false analogy. It is assumed that because the experimentalist obtains certain records which are capable of demonstration, that these are of more value than the information derived by the doctor from questioning his patient, or by the use of his own senses trained by long experience. Those who reason thus unconsciously compare unequal things. In laboratory experiments, it is impossible to obtain any information from the great field of subjective impressions. In man this is the most important field, and far outruns the field for mechanical exploitation in giving us information as to the nature of disease. The laboratory worker obtains his results by a delicate mechanical contrivance. The physician has to train his senses, and this can only be done by a long process of education, only capable of being acquired by the constant contact with the patient . . . But unfortunately, it requires a great deal of experience to elicit from patients an intelligent description of their sensations, and an experience which will enable the doctor to recognize those different sensations; and this is just one of those essentials required in the examination of patients which the laboratory-trained physician seems unable to acquire. As a consequence of his inability to acquire this knowledge, he ignores the information which it reveals, which I have shown is one of the causes of the neglect of the study of the early signs of disease. I have dealt somewhat fully with the danger that may result from the employment of laboratory methods in clinical medicine, and it may be assumed that I disapprove of them, but I am far from doing that; what I wish to guard against is their injudicious use."

That Ayurveda excels just in respect of those points whose bungling in Western medicine is deplored in the large number of authoritative criticisms cited above may be gathered from a study of the fundamental principles of Ayurvedic treatment, whose essentials I may now proceed to summarise here for purposes of comparative study. What has struck me as one of the most valuable and scientific features of Ayurvedic treatment is the great emphasis laid therein on the extreme importance of basing our treatment on accurate diagnosis and *prognosis.* What would not Sir Mackenzie give or do, to see that this conception is firmly rooted among Western physicians in general ?

The various diagnostic data which the Ayurvedic physician was enjoined to investigate before proceeding to lay down his line of treatment are succinctly summarised in the following verses of Vaghbhatacharya, in his Ashtanga Hridaya-Sutrasthan, Chapter XII—verses 66–68—

तस्माद्विकारप्रकृतीरधिष्ठानांतराणिच ।
बुद्ध्वा हेतुविशेषांश्च शीघ्रं कुर्यादुपक्रमम् ॥
दूष्यं देशं बलं कालमनलं प्रकृतिं वयः ।
सत्त्वं सात्म्यं तथाहारमवस्थाश्च पृथग्विधाः ॥
सूक्ष्मसूक्ष्माः समीक्ष्यैषां दोषौषधानिरूपणे ।
यो वर्तते चिकित्सायां न स स्खलति जातुचित् ॥

What is sought to be emphasised in these memorable verses is this :—Having diagnosed Vikara (morbid features), Prakriti (natural vitality or power of resistance), Samuthana Vishesha (secondary foci), and Hetu Vishesha (special causes), the physician must *speedily* undertake suitable treatment ; and if he is not to bungle in his work, he must proceed, alike in his diagnosis of Doshic-morbidity and in the selection of suitable remedies, with the expert investigation in every detail of the specific diagnostic data of diverse kinds, such as the following :—

(1) *Dushyas* (literally, those that can be vitiated) includes the investigation of both the Malas (excretions) and the seven Dhatus (Chyle, Blood, Muscle, Bone, etc.).

(2) *Desha* (literally, the field) includes, the investigation of both Bhumi Desha (locality) and Athura Desha (or patient, who is the *field* of disease).

(3) *Bata* (literally strength) includes both Bata or natural strength or power of endurance of patient, as also strength of disease, whether it is Alpa Bata, Madhya Bata or Maha Bata, mild, medium or severe).

(4) *Kala*—Time or seasonal factor.

(5) *Anala* (literally, fire means the investigation of the state of digestive fires).

(6) *Prakriti* (specific Dhatu-equilibrium, e.g., whether Vathala, Pitthala, or Shleshmala)—these terms have already been explained.

(7) *Vayas* (age).

(8) *Diet* (vegetarian, non-vegetarian, etc.).

(9) *Satwa* (mental condition).

(10) *Satmya* (compatibility, that is to say, what drug, diet, exercise, etc., suits patient and disease, and what does not).

The extreme care with which the physician was expected to systematically investigate the abovementioned diagnostic data may be illustrated by the following explanations of some of them, taken from the written evidence (Samskrit) of the venerable Swami Lakshmi Ramaswami Acharya of Jaipur :—

" Dushyas act as secondary or accessory causes of the Doshas (which are the primary or exciting causes), by undergoing Vriddhi, Kshaya or Vikriti ; for example, in Prameha, the Dushyas are medas, muscles, excretions ; in leprosy, skin, blood, muscles, lymph, etc., in hæmorrhoids, the skin, blood vessels, muscles and medas of the anus ; mind and brain and others, in epilepsy, and like conditions, and so on. The various diseases which arise in relation to the component Dravyas, by the Vriddhi, Kshaya or Vikriti of the Dushyas, which are of many kinds, such as,

Dhatus, Upadhatus, Malas, Ashrayas, Margas, etc., have been described in our texts in their appropriate places. Thus, by knowing the relation of Dushyas to disease, we get a knowledge of the curability or otherwise of disease ; for example, certain Dushyas show a predominance of Vata Guna, others, of Pittha Guna, yet others, of Shleshma Guna ; if a Dosha is re-enforced by a Dushya of similar Guna, then it will make for incurability ; therefore, it is said, that among the conditions of easy curability are the following, viz. :—

(1) that the Dushya should not be of similar Guna as Dosha,
(2) that the Dosha should not be of similar Guna as Prakriti and so on.

Hence it is obvious that the examination of Dushyas is necessary for determining the nature of disease.

We shall now consider the importance of Desa. This is described in our books under two divisions, viz., Bhumi Desa (locality) and Athura Desa (patient). The way that the examination of Bhumi Desa is useful in diagnosing diseases is explained thus : If we know the place where a patient was born, bread up or acquired the disease, then we can infer the likely diseases, as also the severity or mildness of the causative Doshas by reference to the following particulars—the dietary, the mode of life and the practices of the people, the natural physical strength, the natural mental condition, the compatibility, the nature of Dosha (such as those causative of malaria, plague, cholera, etc.), the special local diseases (e.g., the existence of elephantiasis in places where there is stagnant water and which is cool all the year round) and so on. The locality will also help us to judge what will suit the patient and what will not, and is also a factor in the production of severity or mildness of Dosha morbidity and disease. As to Athura Desa, the patient (or Athura) is metaphorically considered as Desa (or place) because he is the field of action—the field where treatment is conducted ; the investigation of this field is specially useful in determining the nature of disease by a knowledge of the measure of *Ayus* (expectation of life) and of Doshas ; both these can be known by reference to the following : Prakriti (inherited constitution), Vikriti (morbidity), Sara (natural power of resistance), Samhanana (natural build), Pramana (measurements), Satmya (compatibility), Satwa (mental condition), Ahara Shakti (digestive power), Vyayama Shakti (capacity for exertion), Vayas (age), etc.

Prakriti. The investigation of the inherited constitution of the patient is as follows :—Prakriti may be classed in various ways depending upon various features, such as Jati (race), Kula (tribe), Desa (place), Kala (time), Vayas (age) and Pratyatma Niyata (individual peculiarities). Of these, individual peculiarity is again divisible into seven types of bodily temperaments (according to proportion of Vata and others) and into fifteen types of mental temperaments (according to the threefold Satwa). Bodily prakriti is dependent on the following four factors :—

(1) parental Shukra and Shonita,
(2) time-factor, in relation to development of fœtus in the womb,
(3) the food and mode of living of mother, and
(4) Mahabhutas."

According to Dr. P. L. Jha, L.M.S., of Cawnpore—an erudite expert in both western medicine and Ayurveda who has elaborately discussed this topic in his learned written evidence—the following are some of the essential principles of Ayurvedic treatment, which are always to be kept in mind before diciding upon any suitable line of treatment :—

"(1) All therapeutics should be employed according to the stages of the diseases of Kriya-Kalas. Five Kriya-Kalas indicating the use of a special Karma or method are known.

(2) All therapeutical measures are to be used only in those cases where they are indicated and not employed in the cases where they are not indicated. Indications and counter-indications of each Karma or method must be remembered by the practitioner.

(3) All rightly applied measures produce distinct signs and symptoms of success of the measures. The signs of each Karma are to be remembered. The Samyak or Samyog of a Karma are to be remembered.

(4) All therapeutical measures can be wrongly or improperly applied in only three possible ways :—

Heenayog, Atiyog and Mithyayog.

Diseases or complications are produced by erroneous applications of the methods and can be recognized by distinct signs and symptoms produced in the patients.

(5) All patients restored to the Prakritistha state must be advised to remember their Hita and Ahita, or Upashay and un-Upashay at the time of discharge from the Pancha-Karma Griha and Kuti (Ayurvedic hospital and sanatorium).

(6) In all cases during the case-taking, the following important points are gone through in each case, for selection of the proper remedies to suit a case :—

(i) Ayu-Pariksha (prognostic consideration).
(ii) Vyadhi-Pariksha (diagnostic considerations).

Briefly the Ayu-Pariksha involves the investigation of the various factors about the patient whether existing in his body or outside it, which influence the prognosis. The various factors which lead to the lowered state of resistance or natural vitality of the patient are to be discovered in the various organs of the patient and his environments.

Ayu-Pariksha is thus an approximate estimate of the state of natural resistance as it existed in the state of health of the individual and as it exists during the state of his illness.

The Vyadhi-Pariksha or the diagnosis of the disease, on the other hand, deals with the various other factors which enable the physician to recognize the disease fully ; these factors are investigated with the view of finding out the extent of the disease process and its nature exactly. The Vyadhu-Pariksha, in short, is an approximate measure or estimate of the extent or virulence of the Doshas or the disease."

It is probably the admirably scientific nature of the Ayurvedic conception of basing treatment on accurate diagnosis and prognosis that made Dr. Clarke enthuse so highly over Ayurveda, and speak of it in terms (already quoted) of such high praise, as to almost suggest the proverbial zeal of new converts, in which category some of my friends have already brought me under ; whether or not this appellation fits me, I am quite clear in my mind that, in its enunciation of the general principles of treatment, Ayurveda does not suffer by comparison with western medicine. This statement may find further support from the following extracts, taken from the written evidence of Dr. Mahamahopadhyaya Kaviraj Gananatha Sen where he indicates the general principles of treatment as well as their application in actual practice : "The *sine qua non* of proper treatment is of course proper diagnosis (as explained above), particularly with a view to our 'Thridosha' pathology. This done, we have to ascertain whether we have to fight the intrinsic cause (i.e., धातु वैषम्य) or the disease itself ; also whether the case is Sadhya or easily curable, Krichchra Sadhya or curable with difficulty, or Asadhya or incurable. The last group of cases is either not treated at all or treated only to make the disease Yapya or tolerable.

Now, let us first consider *the medical side of treatment.* First of all, we take note of the Samata (सामता) i.e., presence or absence of auto-intoxication in every disease. If auto-intoxication is present, we treat the patient by fasting, purging, etc., within the limits of the patient's strength and tolerance till the symptoms of auto-intoxication disappear. These symptoms have been stated very clearly in a general way as also in particular for different diseases. This line is called samshodhan or "clearing-up" treatment. As an example of this may be cited fasting or purging in some fevers as the first course of treatment. If there is no auto-intoxication, we treat the disease directly (e.g., giving a febrifuge in fevers). This is called Samshaman or "putting down" treatment. Both kinds of treatment are of course done with a clear grasp of the *doshic* derangement, the removal of which is considered the ultimate goal of treatment. In this connexion, it is worth while to mention

that there are five methods (Panchakarma) of the *samshodhan* or "clearing up" treatment. These are :—

(1) *Vamana* or the use of emetics or washing out the stomach.

(2 *Virechan* or the use of purgatives with a view to clear the upper or lower bowels. Numerous purgatives have been described to suit various cases.

(3) *Shiro-virechan* or the use of errhines to promote the nasal secretions—in diseases of the nose and throat generally, in some diseases of the eye (as glaucoma) and in some forms of intractable headache and cerebral diseases.

(4) and (5) '*Asthapan*' and '*Anuvasan*,' known collectively as '*Vasti-karma*' which comprise the various forms of enemata, known and unknown to the Western science. To enumerate some of these, we may mention—

(i) *Shodhona vasti* or *Niruha*, made up of medicated alkaline fluids for clearing out the colon.

(ii) *Snehana vasti* or *anuvasan*, made up of similar fluid with copious oily substances in it—for clearing out the colon and soothing the pelvic nervous system.

(iii) *Pichcha vasti*, mucilaginous enemata used as emollients to soothe the inflamed mucous membrane of the colon in colitis and other diseases.

(iv) *Brihmana vasti*, or nurient enemata used not only in extreme cases, where feeding by the mouth is not possible, but also in ill-nourished patients who can take by the mouth.

(v) *Bheshaja vasti*, or medicated enemata—cf. Bromide and Chloral injections in Western medicine.

And so forth, hundreds of drugs and recipes are described for use under each of the heads above enumerated. So much indeed was the reliance in Masti Karma in certain diseases that we read :—

वस्तिं चिकित्सार्धमिति ब्रुवन्ति ।
सर्वां चिकित्सामपि वस्तिमेके ॥

Enemata constitute half the treatment if not the whole treatment as some physicians think."

Such are the general principles and methods of Ayurvedic treatment. If critics would really make an understanding study of Ayurveda before they pass their judgment on it, then it seems to me that it would be extremely difficult for them to characterise it as 'non-rational' or 'unscientific.' On the other hand, I have heard it from many practitioners who are experts both in Western medicine and Ayurveda that the latter is, in some respects, more rational and scientific than the former. I may perhaps illustrate this observation by one or two examples.

We have seen above that great emphasis is laid in Ayurdeva on the accurate diagnosis of not only the disease but also the patient himself, so that appropriate treatment may be laid down by judging the prognostic significance of every diagnostic feature of both patient and disease. We have also seen that, according to Sir Mackenzie, the supreme importance of this most scientific conception is not sufficiently recognized or emphasised by Western physicians generally. However that may be, we have it on the high authority of Dr. Mahamahopadyaya Kaviraj Gananatha Sen and Dr. Kaviraj Yamini Bhushan Roy that the Ayurvedic method of the systematic and routine investigation of both patient and disease has frequently helped them to succeed where their brother-practitioners of Western medicine failed, largely because of the fact that the latter did not possess the key to the proper *diagnosis of the patient* (his prakriti, satwa, satmya, etc.), though they were quite correct in their *diagnosis of disease.* In my personal interview with them in Calcutta, both were good enough to illustrate their observations by facts within their own experience; and I was greatly struck with an observation that Dr. Gananatha Sen made about the scientific use of quinine in malaria, which, it is perhaps just as well I mention here. The reason why it appealed to me so strongly was perhaps because that, beyond its direct and immediate application in quinine administration, I also seemed to see therein the key to the mysteries of anaphylaxis, non-specific protein-therapy and such other phenomena that have recently come within the range of Western medicine.

It is well known that some persons suffer from what we now call 'idiosyncracy' (merely a name to disguise our ignorance) towards some articles of diet, drugs, etc.,—strawberries, crabs, quinine, bromides, iodides, and so on. Dr. Gananatha Sen's observations were with reference to quinine alone. He stated that while Western medicine cannot help us to tell beforehand which of our patients is likely to suffer from quinine idiosyncracy and which not, we are able, if we know how to diagnose our patient (specially his prakriti) according to Ayurvedic methods, to avoid making any mistakes about quinine administration. It would appear that, according to Ayurveda, a drug like quinine with its peculiar 'rasa' (taste), veerya (potency), etc., must be used cautiously and in small doses in certain prakriti (say, vata prakriti), while it is quite safe even in fairly big doses in other prakritis. Western medicine has at present no means of recognizing a patient's prakriti. Hence, he added, it has to act more or less blindly, and learn from the bitter experiences of its patients. He also told me that, in addition to the Ayurvedic methods of diagnosing prakriti, he was also trying to interpret objectively by sphygmographic tracings, correspondences to the Ayurvedists' pulse of vata prakriti, pittha prakriti, dvandvam, sannipatham, and so on. It is this aspect of it that set me thinking about the immense possibilities of research along these lines, if only some brilliant expert researchers of Western medicine would carry on their investigations in the light of these Ayurvedic hypotheses. Then, too, how near allied are these prakriti variations to those exhibited in the phenomena of anaphylaxis, blood-transfusion groups and the like, the mysteries of which are now exercising so profound an influence on the advanced wing of our Western thinkers of to-day? Are they all explainable in terms of prakriti? Can prakriti variations be diagnosed with sufficient accuracy as to explain and foretell the workings of the phenomena mentioned above? If the answer to these questions is in the affirmative, then, surely, the place of Ayurveda in the ranks of science must be very high indeed.

So much for the testimony of Dr. Gananatha Sen. I may also cite here the following extracts from the written evidence of Dr. Yamini Bhushan Roy, who also spoke to me as to how the knowledge of the condition of both the patient (his prakriti, satmya, etc.) and his disease helps the Ayurvedists to succeed where his brother-physician of the Western system fails:—" The principles of treatment are so clear and scientific, and the methods so well suited to us that even a very ordinary practitioner can and does undertake with success the treatment of very serious cases, and frequently of cases given up as hopeless by Western-trained doctors. I may perhaps illustrate my point by an example. In our shastras, two kinds of fomentations are described, viz., dry and moist; the indications for the use of each are so well laid down that an ordinary Ayurvedic practitioner never makes the mistake of using the one for the other. The allopathic practitioners also recognize that these two kinds of fomentations are indicated in different conditions; but the subject is so imperfectly known to them that, not long ago, certain distinguished allopathic expert brethren of mine, who were engaged in treating an independent Ruling Chief of Bengal failed because of the lack of proper guidance from their science, where I succeeded, thanks to the clear and never-failing guidance of our shastras. The Royal patient had atrophy of the muscles of both arms and legs, and was completely bed-ridden. My allopathic friends knew that fomentations were necessary but they did not know that it was not the dry but the moist fomentation that was indicated here. They only used dry fomentations, including electric current. This and the use of their highly scientific instruments notwithstanding, the atrophy grew worse and worse. It was clear to me it was a case for moist fomentations of the nature of medicated ghees, oils, marrow-fat, etc. I at once began the treatment with a hopeful mind, certain to convince an unbelieving Maharaja, from his own experience, as to the unrivalled efficacy of Ayurvedic treatment, even after its neglect for centuries by our rulers and, following them, by the ruled also. I want to impress upon you that it is only by my knowledge of Ayurveda which taught me that it was snighda sneha that was indicated in the derangement of vayu and the last stage of atrophy that I was able to succeed where my allopathic brethren failed. My knowledge of allopathy could no more help me here than it did my allopathic expert friends who had charge of the case before me. But, by the grace of our Rishis and the help of Ayurveda, I was able to afford rapid relief to my Royal patient, so that

within a month, the bed-ridden Maharaja was able to write, to walk and to attend to his ordinary duties. Such instances can be easily multiplied; but, there is no need for them here. Speaking, for myself I shall be guilty of the basest ingratitude to Ayurveda which is my never-failing solace, if I do not gratefully recognize and loudly proclaim that the Ayurvedic theory of tridosh has always helped me both to diagnose and to treat cases more successfully than if I had followed only the guidance of the allopathic system. Before I close this topic, I shall give you only one more illustration to show how perfectly scientific Ayurveda is both in the matter of diagnosis and treatment. You all know that in cases of hyperpyrexia the sheet-anchor of allopathy is cold, i.e., wet-packs, ice to head and so on; according to Ayurveda, this is dangerous quackery. Cold in any form is only indicated in fevers due to agneya causes, while it is heat that is indicated in fevers due to saumya causes. This is a distinction unknown to allopathists who treat all cases of hyperpyrexia by the same rule of thumb, because at present they know no better; for they do not know that, from the standpoint of treatment, it is very necessary to recognize that hyperpyrexia may be due to causes directly contrary to each other, and that therefore it is always unscientific as well as undesirable and sometimes dangerous to treat all fevers by one and the same method of application of cold.

"For the benefit of humanity, I implore all doctors, whatever their nationality may be, to study at least the tridosha theory. It will help them uniformly and in every case to diagnose and treat correctly, that is to say, scientifically. Allopathy does not do this in a number of cases. Our theory will help them not only to diagnose the nature of disease but the various types of it as well, as also the changes it is undergoing from time to time. Without a knowledge of these changes, treatment would be unscientific and may lead to disaster."

General Principles of Treatment.

35. There is also a very valuable and unique feature about Ayurvedic treatment which is worthy of special mention, and that is its essential universality or catholocity. We have already seen in our discussion of Ayurvedic pathology that its conception of causative factors of disease is so all-embracing that it can find a ready-made niche for all causes that are already known as well as for those that may hereafter become known. The same is the case with the Ayurvedic system of treatment, which seems to have ready-made niches for all the numerous forms of treatment that are already in vogue, such as allopathy, homeopathy, osteopathy, kuhne-cure, vaccine-therapy, psycho-therapy, and so on, as also for all other forms that may hereafter come into vogue. The meaning of this treatment may become clear if I detail here the Ayurvedic conception of the various modes of action of all our remedicl measures; the following account of it is taken from the written evidence of Mr. K. Sankara Menon, M.A., L.T., the learned Ayurvedic scholar of Travancore and the Director of the Government Ayurvedic Department, who, in referring to the six modes of therapeutic action recognized by Ayurvedists, expresses himself thus:—

"(1) *Hetu vipareetham.*—By carefully studying the cause of the disease, such medicine as will produce the opposite condition of the actual cause must be administered. In this connexion it is to be remembered that there are two kinds of causes (i) internal and (ii) external; and the medicine should be selected with a view to bring about the opposite condition of one or the other, according to necessity.

(2) *Vyadhi vipareetham.*—By studying carefully the nature of the disease through its symptoms, medicines are to be administered with a view to produce the opposite condition of the disease itself.

(3) *Hetu-vyadhi vipuryastham.*—In certain diseases, the cause and result will have to be taken both into account. In such cases, medicines that will produce the opposite of both cause and effect will have to be administered.

In certain diseases the cause will disappear after producing the disease and in other cases the cause will be persistent in producing the disease repeatedly. In the former case disease alone should be treated, while in the latter case both the cause and disease should be treated with such medicines as will produce the opposite condition of both.

(4) *Hetu thadarthakari.*—The thadarthakari medicine is that which produces the same condition. The principle that is involved here is 'Similia Similibus

Curantur.' In this particular case medicines that will produce the same condition as the cause itself should be administered. Here also the cause may be internal or external.

(5) *Vyadhi thadarthakari.*—Medicines that will produce the same conditions of disease will have to be administered for its cure.

(6) *Hetu-Vyadhi-thadarthakari.*—In this particular case, medicines that will produce the same condition of cause and disease are to be administered. The cause and disease are to be separately treated as in three supra. The subdivisions (4), (5) and (6) are greater amplifications of the homeopathic principle enunciated above. This shows that the ancient Hindus have had clear notion of 'Similia Similibus Curantur.' Allopathic treatment is more or less confined to subdivision (2), where medicines are given to produce the opposite condition of the disease. The subdivisions (1), (2) and (3) give in detail tne principle of treatment according to allopathy which is partial and incomplete."

I may also add here that the category of thadarthakari remedies given above is wide enough to include all forms of vaccine-therapy known to Western medicine, although Ayurvedists do not practise them and some authorities class them under 'ashuddha' or 'impure' remedies which are to be avoided because, while curing one ailment, they give rise to another.

Incidentally, it may also be noted here that the fundamental universality or catholocity of Ayurveda has saved it from those perils which are fast becoming the despair of Western medicine, viz., the perils of faddism and hyper-specialism, which Bernard Shaw has so well caricatured in his "Doctor's Dilemma" and other writings. Ayurveda, like Hindu thought generally (religious, philosophical or scientific), is so universal that there is no need for any one to set up a sect of his own and proclaim from the house-tops, "There is only one way to sound health, and that is my way; follow me if you are wise and so save yourself." But, without Western brethren the case seems to be quite different. There, we have an ever-increasing number of medical sects, each with a special nostrum or formula wherewith to cure or charm away all ills that flesh is heir to. Each may undoubtedly have its own limited field of usefulness and applicability, but the danger is in the attempt to transform it into a universal panacea. The rate at which specialists of this type are increasing is truly appalling. One would cure all ills by osteopathy, another by chromopathy, yet another by homeopathy, a fourth by allopathy, others by electricity, baths, food-reform, vaccine-therapy, charms, incantations, miracle-workings, magnetic healing, faith cures of many kinds, denial of diseases, affirmation of health, alkaloidal remedies, respiratory exercises, and so on, the list goes on, till one fails to see the forest for the trees. The latest mantram in the field seems to be the use of E.R.A. (electronic reactions of Abraham), which reduces the immense complexity of medicine to the extreme simplicity of merely finding out the radio-activity rate of the disease by testing a drop of blood taken on a piece of blotting paper and treating it by a current of appropriate vibratory rate, when, lo, the cure is established—a marvel truly! As I said before, it would be unscientific to deny that each of these 'cures' may have their own appropriate fields of usefulness and applicability, but the trouble comes in when the follower of each claims that his is the only true mantram, and all else is false. It is only natural that, under such circumstances, a sort of distrust of all specialists is created in the popular mind, even to the extent of sympathizing with the trenchantly severe criticisms of Bernard Shaw that "no one can be a pure specialist without being in the strict sense an idot." But one need not agree with all that this gifted writer says, to see that he is warning us against a real danger, and to that extent, he is doing a distinct service to the medical profession. For instance, I cannot see eye to eye with him in more than half of the condemnations he has managed to roll up into a single paragraph on 'hypochondria' in his 'Heartbreak house'; but I can yet see to what extent the catholicity of Ayurveda has saved it from the perils of unhealthy faddism and over-specialization to which western medicine seems to be specially susceptible, as may be seen from the following caricature, which, though valuable as a warning, is yet too destructive and overdrawn to be useful as a guide; "Now Heartbreak house was a hypochondriacal house, always running after cures . . . It could stop eating meat, not on valid Shelleyan grounds, but in order to get rid of a bogey

called uric acid, and it would actually let you pull all its teeth out to exercise another demon named Pyorrhea. It was superstitious, and addicted to tablerapping, materialization seances, clairvoyance, palmistry, crystal-gazing and the like to such an extent that it may be doubted whether ever before in the history of the world did sooth-sayers, astrologers, and unregistered therapeutic specialists of all sorts flourish as they did during this half century of the drift to the abyss. The registered doctors and surgeons were hard put to it to compete with the unregistered. They were not clever enough to appeal to the imagination and sociability of the heart-breakers by the acts of the actor, the orator, the poet, the winning conversationalist. They had to fall back coarsely on the terror of infection and death. They prescribed inoculations and operation. Whatever part of a human being could be cut out without necessarily killing him they cut out and he often died (unnecessarily of course) in consequence. From such trifles as uvulas and tonsils they went on to ovaries and appendices until at last no one's inside was safe. They explained that the human intestine was too long, and that nothing could make a child of Adam healthy except short-circuiting the pylorus by cutting a length out of the lower intestine and fastening it directly to the stomach."

It is true that persons consider it preposterous that 'laymen' like Shaw should preach such sermons on Medicine to doctors, and still more preposterous that there should be doctors willing to listen to them. For my own part, it all depends on who the layman is and what he says, whether or not I agree to take him as my guide; and am quite willing and even eager to learn medicine from whatever source it may come, provided it appears to me to be worth learning; if I err in this, I err in the very good company of Prof. Arthur Keith, who in his Foreward to Morley Roberts' "Warfare in the human body" answers thus the very question that is raised here:—"How is it possible, the reader of these essays may well ask, that one who has been known these thirty years past to a wide circle of readers as a writer of fiction, can know anything concerning the secrets of life and of disease with which men of science are not already familiar? The explanation is not far to seek. As a writer of true fiction it was Mr. Morley Roberts' business to study human nature and human action, and to grasp the conditions, under which millions of individuals might be massed in communities, and yet remain free and happy. In the body of the healthy living animal, where billions of vital units are massed together in ordered harmony, nature has accomplished this miracle. What was more natural, then, than that an author endowed with a vast share of intellectual curiosity and gifted with the diagnostic acumen of the born physician should seek for a solution of his difficulties in the workshops of men of Science? He has not lived, toiled, and earned a livelihood in any one of the multitude of quarters into which the bewildering City of Modern Science is sharply divided. Yet by the sheer force of his imagination, one which is at once intimate, intuitive, accurate, and vivid he has absorbed the atmosphere of the place, become familiar with its inhabitants, their ways of thought, and their industries to a degree which is rare among even the most experienced natives of this great city . . . Men who have grown grey in those quarters of the City of Science, which are devoted to the service of medicine, are accustomed to the visits of strangers of diverse types. They have seen chemists like Pasteur and Lavoisier and clergymen like Stephen Hales and Priestley, force their ways into their workshops, ultimately revolutionizing their industries. They are also familiar with the newly fledged student of first-aid, who breaks his way through the circle of spectators surrounding a street accident, and brushing aside the skilled surgeon, takes charge of the case. Occasionally, too, they come across those visitors who letting their imagination rise on untrammelled wing, picture for them a future full of marvels. In Morley Roberts we have a visitor of a new kind—one who compels his imagination when in flight to observe the laws of gravity, time and space. Nay, so like a native does this visitor carry himself, that for several years there were many besides myself that had no suspicion that Morley Roberts, the erudite writer on medical and allied problems, was the same Morley Roberts who is known in Bohemia as an artist of noted skill with pen and brush. In these essays he has earned for himself the freedom of the City of Realities or Science."

Now, to return from this digression to the further consideration of the various therapeutic measures mentioned above and of the selection of one or other of them

in any particular case, that has to depend, of course, on the exact stage of the disease, and the prognastic significance of the diagnostic features of each stage. If diagnosed in the early stages, it may be enough to treat the Hetu or cause; if, however, it is allowed to go on developing, then, it may become necessary to treat the vyadhi or the disease or both hetu and vyadhi (cause and disease). The extremely scientific way in which these various kinds of therapeutic measures are correlated with the progressive pathological changes of dosha-morbidity (such as Chaya, Prakopa, Prasara, etc.), affords very interesting reading but I cannot go into those details here. I may, however, mention that it is by such knowledge that Ayurvedists claim to diagnose and cure diseases in those early stages, where Western medicine has no means of recognizing them, as well as in those chronic stages where western treatment is not attended with any encouraging results. Dr. P. L. Jha, L.M.S., of Cawnpore, in referring to this aspect of the question, expresses himself thus in his written evidence :—

"The modern scientists are unable to recognize the disease process at this early stage (Prakopa stage) and do anything rationally for the good of the patient. But, the Ayurvedic physician can treat the patient rationally and check the further progress of the disease even in this early stage. . . Ayurveda alone throws light of a scientific nature on this stage (Prasara stage) of the disease process, not at all understood or known in other systems as yet; and that is the reason why the cases of cholera, typhoid fever, dysentery, etc., so easily yield to Ayurvedic treatment. The percentage of cures in these cases is astonishing (I had occasion to see these results when I worked as President of the All-India Ayurvedic Sewa-Samiti in the Kumbh malas). . . . . . The other systems owing to their imperfect and artificial characters are yet unable to explain or understand the true and radical cure known in Ayurveda as Prakritisthapana (see therapeutics) or the natural state of health that existed before the Chayakal, or first stage of the disease. They, therefore, after relief of the patients (as is true of most cases, except malaria probably) regard the cases to be cured and let them go away actually with the disease process in a latent state, which they cannot recognize; because there is actually no scientific means yet found by their founders or adherents which can enable them to recognize the true state of health called Prakriti or Swasthavastha. This, however, is well known to the Ayurvedic physician by the knowledge of certain health activities and signs mentioned below :—

समदोषः समाग्निश्च समधातुमलक्रियः ।
प्रसन्नात्मेन्द्रियमनाः स्वस्थ इत्यभिधीयते ॥

And for this reason only, the number of chronic patients is increasing in the world and certainly in India every day. . . . According to Ayurveda, that pathologist alone who understands the whole of the disease process as it occurs in all the stages described above can be called a true physician. He alone can render true, scientific and rational aid to the patient suitable to the stage of the disease and the times or seasons."

It is no doubt true that the diagnostic methods of Ayurveda are mostly clinical in contradistinction to laboratory methods of Western medicine, whose ever-increasing complexity is fast becoming the despair of many of our modern-day practitioners of the West. Not that Ayurveda has nothing corresponding to the western laboratory methods, but its genius, as that of Hindu thought generally, is to train the senses and the mind of the observer himself (which is the essence of the clinical method) rather than perfect a machinery external to the observer (which is the essence of the laboratory method); and it seems to me that it is in the best interests of both Western medicine and Ayurveda that they learn from each other what each has specialized in. We have already seen how Sir Mackenzie has drawn pointed attention to the great mischief wrought in the west by the non-recognition of the great limitations of the laboratory method, and of the immense value of the trained senses and the clinical methods generally. It is only by a harmonious combination of clinical and laboratory methods that we may be able to get beyond the present chaos and complexity of a veritable babel of laboratory findings to some

intelligible order and simplicity in diagnostic methods, which is the most crying need of the hour, as may be seen from the following weighty remarks of Sir Mackenzie :—

" It must become evident, with the development of mechanical aids and other methods, that there is no end to the methods that may be employed in investigation. This is seen from the large number of methods recommended for the student's instruction on pages 35 to 39, and this only gives a fraction of the methods that are available, to which additions are constantly being made. This indiscriminate way of using these methods not only confuses the purpose of medicine, but at times reduces its practice to a farce, so that it is time a halt was called, and the real value of these methods estimated. For the discovery of new facts connected with the phenomena of disease, there will ever be an improvement of, and addition to, these methods—and this should be encouraged. But before these methods can be employed in clinical medicine, and recommended for use in practice, certain preliminary steps must be taken. Before a new method is introduced into medicine, its limitations must be realized and the nature of the knowledge it reveals must be demonstrated. I have already referred to the harm which the neglect of this advice did to medical science in the case of the stethoscope, and which is being done to-day in the use of blood-pressure instruments, the X-rays and the electro-cardiograph. Everyone knows what harm has been done by the misinterpretation of the shadows in the lung and other organs revealed by the X-rays, and by the conclusions drawn from a reaction to tuberculin. The whole history of the tubercle bacillus is but an exemplification of the neglect of this precaution ; and the mischief which the random use of mechanical methods has done is incalculable. After a new method has been discovered steps must be taken to supersede it. . . . The next thing the discoverer of a mechanical device must do after he has recognized its use in clinical medicine is to get rid of it in practice. This seems an absurd recommendation, but it is vital to the progress of clinical medicine. If, for instance, all those methods and devices described in pages 35 to 39 were necessary to the pratice of medicine, how would it be possible for any doctor to do his work ? The way this can be achieved is by employing the law of associated phenomena described on page 129. I have already pointed out that impaired health is always associated with a number of symptoms, and it is doubtful if there is any sign of value revealed by a mechanical device which has not associated with it other signs produced by its cause, or produced in some other way which will reveal its presence, or from which its presence can be safely deduced. . . If there be no clinical sign, then it may be taken that the fact, revealed by the method, is of no importance so far as the health of the patient is concerned. This is a general rule, here and there exceptions may be found. For the prosecution of limited fields of research, laboratory methods will always be necessary. It is manifest, for instance, that the accurate estimation of the effects of remedies on the heart can only be acquired by some instrument that records the movements of the heart and blood-vessels. These and other methods are necessary for research and for purposes of demonstration. For teaching they should be used sparingly, and chiefly with the view of training the senses, and not as a substitute for the senses. There are three considerations which should be borne in mind by those who employ laboratory methods in clinical diagnosis before the new method should be recommended for use in the practice of medicine.

First.—The sign revealed by a laboratory method must be studied so that the mechanism of its production is understood.

Second.—The value of the sign must be assessed so far as it bears upon the patient's future health.

Third.—The method, if instrumental, must be supplanted by ascertaining the associated phenomena perceptible to the unaided but trained senses." (*The Future of Medicine*, 1919 *edition, paragraphs* 194–198.)

It is precisely on the grounds that are so authoritatively stated above by Sir Mackenzie that I venture to plead for a harmonious and judicious combination of the clinical methods of Ayurveda with the laboratory methods of Western medicine.

36. Then again there is another decisive reason why Western medicine should, in the best interests of science and suffering humanity, direct its fructifying energies to the understanding study of the principles of Ayurvedic pathology, diagnosis and the like, and it is this; even the most rabid of anit-Ayurvedists will have to admit that there are a good many drugs and other valuable remedies (such as the well-known Malabar treatment for chronic rheumatism, paralysis and vata diseases generally) which it is well worthy of study by any physician who cares at all (and who does not ?) for the relief of human suffering or the progress of science. There are however many well-meaning persons who, while admitting readily, and even enthusiastically, the truth of the above proposition, are nevertheless of opinion that it is not necessary to study Ayurveda to know the use of these remedial measures and that practitioners of Western medicine may well be trusted to use them in the light of their own pathology, diagnosis and the like. This, to my mind, seems a most unscientific procedure, which, if really put into practice, may easily be attended with dangerous and even disastrous consequences, more especially in the case of those highly potent remedies used by practitioners of the Siddha system; such use of indigenous drugs and remedial measures would be as unscientific and dangerous a quackery, as, for instance, the use of vaccines, sera, and hypodermic remedies by Ayurvedists who have not learnt the science on which their use is based, though by a little practice, they may easily learn the art of hypodermic or even intravenous injections. If this is borne in mind, one can easily understand why Ayurvedists object so strongly to the value of Ayurvedic or indigenous drugs being tested and judged by persons who have not made any understanding study of Ayurveda. The essentially unscientific nature of the use of Ayurvedic remedies by persons who have not studied the science of Ayurveda may become clear by the following remarks on the "Use of drugs", taken from the written evidence of Dr. Kaviraj Gananatha Sen :—" *Use of Drugs*.—Materia Medica and Therapeutics. As to the use of drugs, I should like to note that the Ayurvedic Materia Medica and Therapeutics is replete with the descriptions of the action of drugs expressed in the terms of the Tridosha theory as well as in clear statements about their effects on certain organs of the body and their uses in certain diseases. Of course these descriptions, in terms of the Tridosha theory and other technical names (as विकारि, व्यवायि, etc.) are a sealed book to those who have not learnt to translate them into 'Physiological action' as the west now understands it. The consideration of drugs according to rasa or taste, birya (veerya) or heating or cooling effect, vipaka or the chemical inversions undergone, guna or general qualities specifying the physiological effects, and prabhava or the inexplicable selective action of drugs in particular diseases—is an admirable feature of Ayurvedic Materia Medica worth the careful study of any scientific worker.

Here, I would strongly repudiate the sweeping charge made in some quarters that Ayurvedic drugs are used emperically. In fact, there is less empericism in Ayurvedic practice than we find in the practice of Western medicine. Besides, there seems to be a strange idea in some quarters that the success of the Ayurvedic physician depends much on the high efficacy of individual indigenous drugs. This idea, the main spring of action in the so-called 'Researches in indigenous drugs' of which we hear so much in these days, is simply erroneous. The success of the Ayurvedic physician is due not to the 'charm' of this or that drug but to his clear grasp of the *Doshic* derangement and his selected and well-considered treatment of that derangement, according to well-defined principles of therapeutics.

"As to the forms in which medicines are given I should like to point out that fresh juices, powders, infusions, and decoctions are always preferred to preserved drugs in view of the 'Vitamines' and other active principles found only in fresh drugs. The use of minerals in the form of very finely powdered (often inpalpable) oxides and colloids is also a special feature of Ayurvedic practice, which superficial observers have occasionally tried to belittle by their meagre but vaunted knowledge of Chemistry. They seem to forget that there are numerous unassailable facts in Therapeutics, which present-day Chemistry is not yet advanced enough to explain.

"It should be further remembered that there are hundreds of drugs—vegetable—animal and mineral—used widely by Ayurvedic practitioners which their know-all

western-trained rivals have not even heard of yet. Some of these are: Black and Red Sulphides of mercury (Kajjali, Rasaparpati, Rasasindhura, Makaradweaja, etc.), various forms of Iron oxides (Louha-Bhasma) which, by the way, are far more assimilable and much less constipating than western preparations of Iron, Tin oxides and Chlorides (Vangabhasma), Zinc Carbonates (Kharpara Bhasma), Shilajatu, a valuable bituminous drug highly effective in urinary diseases, Gorochana, the gall-stones often found in the bovine gall-bladder and hundreds of vegetable drugs like Semicarpus Anacordium (Bhallataka), Achiranthes Aspera (Apamarga), Tripahla (three myrobalans), etc. But to the bigotted and prejudiced medical man trained in Western medicine alone, these remain a closed subject because he would never care to study them under proper guidance."

But, without such a study, the use of Ayurvedic remedies by practitioners of Western medicine would really be, as I said before, unscientific and dangeruous quackery; as has been well pointed out by Doctor Gananatha Sen himself at the very beginning of the quotation cited above, it is necessary for the scientific and safe use of Ayurvedic drugs that at least those fundamental principles, such as the Tridosha theory, the theory of Rasa-Veerya-Vipaka-Prabhava, and so on, on which the use of these drugs is based, should be understood; whether in Western medicine or Ayurveda, it is always undesirable—not to say unscientific—to dabble in the Art, without an understanding study of the science. We have already seen in our discussion of Ayurvedic pathology how the Tridosha theory takes us far beyond the cell-unit of our Western medicine. Similarly, Ayurvedic pharmacology takes us far beyond those chemical substances, which we designate as the "active principles" of medicinal agents; this may become clear if I indicate here the several factors on which, according to Ayurvedists, the actions of drugs are held to depend. These are as follows:—

(1) *Guna*.—This seems to have reference to what we may designate as the physical properties of drugs, as opposed to the physiological.

(2) *Rasa*.—A technical term, rather difficult to translate, though it is generally rendered as 'taste'; but it means much more, as we shall see presently, and has reference to the direct and immediate action of a drug when it comes in contact with the organ of taste.

(3) *Veerya* (*Potency*).—This is of two kinds—Ushna (literally 'hot') and Sheeta (literally 'cold'); these literal translations are very unsatisfactory, because they emphasize the temperature factor which is not intended in the original; this becomes more obvious when I say that, according to some authorities, 'Veeryas' are not of two kinds only as mentioned above but of eight kinds—Ushna (hot), Sheeta (cold), Snigdha (viscous), Ruksha (dry), Vishada (Expansive), Pichchala (Slimy), Mridu (mild) and Theekshna (keen). These technical terms are, however, not to be interpreted in the sense of their literal English renderings. The term 'Veerya' seems to have reference to the remote action of a drug, but before it has undergone digestive and assimilative transformations. Not only Ayurvedists but the practitioners of the Siddha and Unani systems also, attach great importance to this 'Veerya' factor. Ayurvedists take very great pains, as we shall see presently, to extract, as it were, the Veerya factor of drugs, which, they say, is capable of producing the desired results, overcoming the action of both Rasa and Vipaka.

(4) *Vipaka*.—This has reference to the action of a drug after it has undergone digestive and assimilative transformation. Vipaka can be used to overcome the action of Rasa but is itself overcome by Veerya (or potency). It is generally held to be of three kinds—Katu (pungent), Amla (sour), Mathura (sweet).

(5) *Prabhava* (*specific action*).—Where two drugs show agreement in respect of their 'Rasa', 'Veerya' and 'Vipaka' but are yet seen to show a difference in respect of their therapeutic action, such a difference is said to be due to 'Prabhava.' As an example of 'Prabhava', I may take the following from Charaka-Sutrasthan—Chapter XXVI—"Chitraka (Plumbogo Zeylanica) is Katu (pungent) in Rasa and Vipaka, and Ushna (hot), in Veerya. So is Danti (Baliospermum Montanum, or Croton Polyandrum). But Danti operates as a purgative, while Chitraka does not."

As in their enunciation of the general principles of Aetiology, Pathology, Diagnosis and Treatment, so also in their conceptions of pharmocological principles,

the Ayurvedists seemed to have aimed at the formulation of certain general laws and classifications, which, possessing, as they all did, a characteristic element of universality or universal applicability, helped their followers, not only to understand clearly what was known to them already but also to get a general grasp of things, as they would become known to them from time to time. Take, for instance, their conception of 'Rasa' or 'Tastes.' To the Ayurvedist, the 'Rasa' of a drug denotes much more than what the term 'Taste' conveys to the student of Western medicine; there are certain general laws, by the application of which, he associates every 'Rasa' or 'Taste' with a number of definite physiological and therepeutical actions in terms of 'Dosha,' 'Veerya,' 'Vipaka' and so on, so that by a knowledge of these laws, he claims to be able, not only to utilize an appropriate Rasa or combination of Rasas, in the correction of a particular type of Doshic morbidity but also to infer by the 'Rasa' of new drugs that become known from time to time, what their physiological and therapeutical properties are likely to be. To take an analogy from Western medicine, I may instance the case of 'Bitters,'—a term, with which are generally associated certain therapeutic properties, such as, for example, the property of acting as a carminative or a febrifuge, etc.; but, such examples are only isolated features of Western medicine, while, in Ayurveda the subject is thoroughly systematized into regular scientific categories; all articles of diet, drug, etc., have been elaborately and systematically classified under the six primary tastes—Madhura (sweet), Amla (acid), Lavana (saline), Katu (pungent), Thiktha (bitter), and Kashaya (astringent), so that, by knowing under which of these groups an article of drug or diet comes in, one can get a general idea of its physiological and therapeutic properties. Similar classifications exist for Guna, Veerya, and Vipaka also; and there are also subsidiary rules governing cases where there is disagreement between 'Rasa,' 'Veerya,' etc. All known articles of diet and drug, and even the various phases of human activity (such as, exercise, sleep, study, bathing, and every other conceivable phenomenon) are carefully and systematically classified, according to their physiological and therapeutic properties.

From the above consideration of Ayurvedic pharmacology, it should also become clear that the charge usually levelled against Ayurveda that it has no system of 'standardisation' of its drugs is based on a fundamental misapprehension, viz., that 'standardisation' is merely a question of assaying the proportion of their 'active principles.' How can the modern chemical methods of 'standardisation' help us to standardise the 'Veerya' (or 'potency') of a drug, especially when every stage of concentrating the 'Veerya' would be associated with the loss of its chemical properties? The following passage may help to show how futile it is to apply the modern methods of chemical and even biological 'standardisation' to the assaying of 'Veerya' or 'Drug-dynamisation' as some Ayurvedists have translated it. "Drug dynamisation—It is the potency of a drug that cures a disease. The potency is administered best when the physical or chemical properties of a drug are annihilated. This is best performed by subjecting it to heat or pressure. In the medicated Ghritas or oils of our pharmacopœia, which are prepared by successively boiling or cooking them with drug-decoctions, we cannot even detect the trace of any of its component drugs, but still we know how potent and efficacious they prove in the hands of our Vaidyas." (Kaviraj Kunja Lal Bhishagratna—in his introduction to Sushruta (English Translation)—Volume I—pages 59–60). It would be interesting and instructive to know whether this ultra-chemical 'Veerya' of Ayurveda may have any relationship to these ultra-chemical features of matter, which modern physics speaks of in terms of X-ray spectrum, Positive Ray spectrum, Mass spectrum and the like—features, which are quite incapable of being detected by any chemical means known to us. However this may be, it should be clear, from the considerations mentioned above, as also from the fact that Ayurvedists have their own methods of investigating the properties of new drugs that may become known to them from time to time, that there is really nothing very much substantial in the charge sometimes levelled against Ayurveda that, so long as it entertains its rooted objection to vivisection, it cannot have the proper 'standardisation' of its drugs; for vivisection as now practised cannot help us in standardising drugs as Ayurvedists want it to be done. Moreover, we have to remember that experiments on healthy animals may easily lead us astray; and it is fallacious to judge the effect of a drug on a human being by

the effect it produces on an animal ; for, what is good to the animal may act as a poison to man ; it is also fallacious to judge the effect of a drug on a *diseased* human being by the effect it produces on a *healthy* animal ; for, drugs which may have one action in the condition of health may have quite a different action in the condition of ill-health ; then again there is the clinical fact that two persons may not react to the same drug in the same way and that the same person may not react to the same drug in the same way in two different conditions of ill-health ; in a very real sense then, every dose of a drug that we administer to a patient is a *new experiment*, from which we may learn something which we could not have learnt before. It is well that we recognize these essential limitations to modern experimental pharmacology before we apply the knowledge gained by laboratory methods of experimenting on healthy animals to the domain of clinical experimentation on human beings suffering from diseases of diverse kinds. As long ago as 1917, Sir Mackenzle, in referring to this aspect of the question in connexion with the action of Digitalis in certain diseased conditions of the human heart, sounded a clear note of warning, when he wrote thus :—" The experimental pharmacologist, to whom we have looked for guidance, has been at a disadvantage which he has never appreciated, in that his experiments have been made with large doses in order to get rapid results—doses that are quite different from the medicinal doses we give to our patients. Further, the animals experimented on by the pharmacologist have healthy hearts and blood-vessels, whereas in our patients these organs are diseased ; one of the most striking results that have come out of my investigations is that the action of Digitalis on the human heart depends in a great measure on the nature of the disease present in the heart and this is true especially of the cases in which Digitalis is most beneficial. It follows therefore that the laboratory worker is shut off fro the study of the drug in these very fields of therapy where it is most needed. . . . We may state broadly that while the susceptibility of the heart to Digitalis, in individuals with a normal action of the organ, may be extremely slight, as soon as auricular fibrillation occurs, the susceptibility becomes at once very marked. This peculiar and striking reaction to Digitalis exhibited by the heart when in a definitely marked pathological state, necessarily suggests a new conception of research in the matter of the action of drugs. It is manifest, for instance, that experiments on animals can only afford limited information in regard to this subject ; for, the reaction of a normally acting heart to this drug has been found to be fundamentally different from the reaction of a heart, acting with an abnormal rhythm such as Auricular Fibrillation." (Pages 230–231 and 160–161 : Principles of Diagnosis and Treatment in Heart Affections—Mackenzie—3rd impression).

Sir Mackenzie reverts to this subject again in one of his recent lectures (a defence of the thesis that 'the opportunities of the general practitioner are essential for the investigation of disease and the progress of medicine'), where he states as follows :—" A matter which strikes everyone who gives it attention is the curious difference between theoretical therapy and practical. We have the experimental pharmacologist demonstrating to the student with precision the effects of remedies by animal experiment ; as soon as he enteres the wards of the hospital he finds a different atmosphere—drugs are administered without any reference to their experimental effects, and he finds the knowledge he has acquired in his pharmacological course of no use. The pharmacologist scoffs at the clinician as unscientific and as employing empirial methods. The clinician replies that the laboratory teaching is academic and unpractical."

In the light of these remarks and in view of the fact that no known modern methods of 'standardization' can help the Ayurvedists to standardize such a subtle thing as 'Veerya' or potency, and that they have their own methods of judging the physiological and therapeutic properties of even new drugs, it does not seem to me necessary to make a fetish, as some are inclined to do, of their rooted objection to animal experimentation. Moreover, is it not just possible that the researches of our Bose School may soon enable us to obtain from plant-experimentation the sort of help that we are now deriving from experimentation on animals ?

" Ayurveda goes far a field for its drugs."

37. Finally, we come to certain objections raised against Ayurveda which are either so trivial or debatable that it were very much to be desired that the claim of

Ayurveda to be a science is not sought to be refuted on such grounds; as an example of an objection that should never have been raised, I may instance the criticism that 'Ayurveda goes far a field for its drugs.' If one understands aright the Ayurvedic theory of the Panchabhutic constitution of both drugs and the human body, and its application to Thridosha pathology and the Rasa-Veerya-Vipaka-Prabhava pharmacology, then, he will at once see why Ayurvedists believe that there is no root or plant in this world which an intelligent physician cannot make use of as a medicinal agent. I well remember how some years ago one distinguished Indian Medical Service Officer whose special study was Botany, entered a spirited protest against the criticism of one of his brother officers, who complained "In Ayurvedic pharmacopœia, there are fat, bone, marrow, blood, flesh, extracts of urine, skin, tendons, horns, hoofs, hair and bristles"; the answer was "The British pharmacopœia has, *in addition*, musk, pancreas, thyroid gland, and even testes. . . . . . Calfs'-foot-jelly does not grow on trees"; and that is very true; people who use freely the preputial secretion of the musk deer, the ferments extracted from the stomach, intestines, etc., of animals, and the various kinds of vaccines made from fæces, urine, expectoration and 'foul' matter from pathological secretion and excretions of various kinds are certainly not the people to talk sentimentally over, and throw stones at, Ayurvedic pharmacopœia.

THE CHARGE OF EMPIRICISM EXAMINED.

38. Similarly, it were well I think, if attempts had not been made to belittle the indigenous (or indeed any other) system of medicine on the ground that it is empirical. Sheer prudunce, if nothing else, would require that people living in glass houses should not throw stones at others. A perfect system may perhaps be free from empiricism, but the western system is admittedly not perfect and cannot at all afford to do away with empiricism. Moreover it is worth while that critics should remember that, to say that a thing is empirical, is not to say that it is unscientific; in fact, the empirical method is a definitely well-recognized scientific method even according to that severely critical logician, Mill, whose category of scientific methods includes the mathematical, the explanatory and the verificatory, as well as the empirical methods. I may usefully refer critics who would talk disparagingly of empiricism, as though it were an unscientific method, to an authoritative Oxford publication, entitled "Lectures on the method of science" edited by Prof. T. B. Strong—especially to the first lecture where the empirical method is fully discussed and shown to be the Baconian method, depending mainly on experience and induction; and as is well shown later on in the lecture, induction and deduction are inextricably interlaced in science: "We may find a fact empirically and then deduce the same fact; or we may deduce it, and then find it empirically to be a fact. As Aristotle said, reason seems to confirm phenomena, and phenomena, reasoning". Moreover, to anyone who takes pains to acquaint himself with the progress of medicine, it will become clear that empiricism is one of the valuable methods along which medicine has progressed. There is really nothing about empiricism which may freighten anybody to shun it as black-magic; and it is not right that the bogey of empiricism should be brought up before the bar of this committee to influence its judgment against Ayurveda.

THE CHARGE OF BELIEF IN CURES BY SUPERNATURAL AGENCY EXAMINED.

39. The only other objection which I may refer to here, is the criticism that Ayurveda believes in the healing agency of 'Supernatural' powers. But, granting that it does, are the modern scientists so sure of their ground that they can satisfactorily explain away undoubted cases of such 'cures'? In this connexion, I cannot do better than quote from the writings of the distinguished Scientist Prof. William James, who, in discussing a similar topic, viz., the belief in divine healing and the cures of Christian Science expressed himself thus:—

"To the importance of mind-cure, the medical and clerical professions in the United States are beginning, though with much recalcitrancy and protesting, to open their eyes. It is evidently bound to develop still farther, both speculatively and practically, and its latest writers are far and away the ablest of the group . . .

Lest my own testimony be suspected, I will quote another reporter, Dr. H. H. Goddard, of Clerk University, whose thesis on 'the Effects of Mind on Body as evidenced by Faith Cures' is published in the *American Journal Psychology* for 1899 (Volume X). This critic, after a wide study of the facts, concludes that the cures by mind-cure exist, but are in no respect different from those now officially recognized in medicine as cures by suggestion; and the end of his essay contains an interesting physiological speculation as to the way in which the suggestive ideas may work (page 67 of the reprint). As regards the general phenomenon of mental cure itself, Dr. Goddard writes: 'In spite of the severe criticism we have made of reports of cure, there still remains a vast amount of material, showing a powerful influence of the mind in disease. Many cases are of diseases that have been diagnosed and treated by the best physicians of the country or which prominent hospitals have tried their hand at curing, but without success. People of culture and education have been treated by this method with satisfactory results. Diseases of long standing have been ameliorated, and even cured. . . . . We have traced the mental element through primitive medicine and folk-medicine of to-day, patent medicine, and witchcraft. We are convinced that it is impossible to account for the existence of these practices, if they did not cure disease, and that if they cured disease, it must have been the mental element that was effective. The same argument applies to those modern schools of mental therapeutics—Divine healing and Christian Science. *It is hardly conceivable that the large body of intelligent people who comprise the body known distinctively as mental scientists should continue to exist if the whole thing were a delusion*'. We are surely all familiar in a general way with this method of discrediting states of mind for which we have an antipathy. We all use it to some degree in criticizing persons whose states of mind we regard as overstrained. But when the other people criticize our own more exalted soul-flights by calling them 'nothing but' expressions of our organic disposition, we feel outraged and hurt, for we know that, whatever be our organism's peculiarities, our mental states have their substantive value as revelations of the living truth; and we wish that all this medical materialism could be made to hold its tongue.

"Medical materialism seems indeed a good appellation for the too simple-minded system of thought which we are considering. Medical materialism finishes up St. Paul by calling his vision on the road to Damascus a discharging lesion of the occipital cortex, he being an epileptic. It snuffs out St. Teresa as an hysteric, St. Francis of Assisi as an hereditary degenerate. George Fox's discontent with the shams of his age, and his pining for spiritual veracity, it treats as a symptom of a disordered colon. Carlyle's organ-tones of misery it accounts for by a gastro-duodenal catarrh. All such mental overtensions, it says, are, when you come to the bottom of the matter, mere affairs of diathesis (auto-intoxications most probably), due to the perverted action of various glands which physiology will yet discover. . . . But why in the name of common sense need we assume that only one such system of ideas can be true? The obvious outcome of our total experience is that the world can be handled according to many systems of ideas, and is so handled by different men, and will each time give some characteristic kind of profit, for which he cares, to the handler, while at the same time some other kind of profit has to be omitted or postponed. Science gives to all of us telegraphy, electric lighting and diagnosis, and succeeds in preventing and curing a certain amount of disease. Religion in the shape of mind-cure gives to some of us serenity, moral-pose, and happiness, and prevents certain forms of disease as well as science does, or even better in a certain class of persons. Evidently, then, the science and the religion are both of them genuine keys for unlocking the world's treasure-house to him who can use either of them practically, just as evidently neither is exhaustive or exclusive of the other's simultaneous use . . . . 'Experience of fact' is a field with so many things in it that the sectarian scientist, methodically declining, as he does, to recognise such 'facts' as mind-curers and others like them experience, otherwise than by such rude heads of classification as 'bosh', 'rot', 'folly', certainly leaves out a mass of raw fact which, save for the industrious interest of the religious in the more personal aspects of reality, would never have succeeded in getting itself recorded at all. We know this to be true already in certain cases; it may, therefore, be true in others as well. Miraculous healings

have always been part of the supernaturalist stock-in-trade, and have always been dismissed by the scientist as figments of the imagination. But the scientist's tardy education in the facts of hypnotism has recently given him an apperceiving mass for phenomena of this order, and he consequently now allows that the healings may exist, provided you expressly call them effects of 'suggestion'. Even the stigmata of the cross on St. Francis's hands and feet may on these terms not be a fable. Similarly, the time-honoured phenomenon of diabolical possession is on the point of being admitted by the scientist as a fact, now that he has the name of 'hystero-demonopathy' by which to apperceive it. No one can foresee just how far this legitimation of occulist phenomena under newly found scientist titles may proceed; even 'prophecy' even 'levitation', might creep into the pale."

So sopke Prof. James in 1901–02; much water has flown under the bridges since then and the evidence for his thesis is now much stronger than it was twenty years ago, when he delivered his memorable Giffard lectures on "The varieties of religious experience" from which the above quotations are extracted.

I may usefully close this topic by referring to the following quotation from the writings of a very modern writer T. B. Scott who, though he approaches this question from a standpoint quite different from that of Prof. James, arrives neverthe-less, at conclusions more or less similar to his, regarding the scientific validity of Faith-cures, Christian Science and the like :—

"In scientific language, Biedl sums up the present position of our knowledge thus: 'Two agents are concerned in ordering and maintaining the complex activity of the animal organism; in addition to the nervous communication, which admittedly is the agent in effecting rapid readjustments, there is also a chemical correlation of the different organs; in accordance with the latter, each organ, each tissue, and even each cell by means of its specific secretory products, acting through the agency of the blood-stream, is enabled to exert a specific influence upon other parts of the body. In this manner the equilibrium of the various parts is maintained'.

"In simpler but more poetical language, St. Paul expresses the same truth: 'And whether one member suffer, all the member suffer with it, or one member be honoured, all the members rejoice with it.' The condition, then, that we call perfect health implies a perfect balancing or equilibrium of all our organs and powers. To maintain this balance, or to regain it, if it be for a time lost, is mercifully the Divine Order, the implanted tendency in all. We may so fight against or ignore the laws of nature that this balancing is never perfect, and it is thus that chronic disease arises and gains the mastery.

"The strange and unexpected results that we sometimes see arise from so-called Faith Healing and Christian Science, can, I think, be thus scientifically explained. Under the influence of great emotions, of joy or hope, and also of religious fervour, some of us seem to have the power of calling on our dormant reserves and of increasing the output into the blood of all our home-made autacoids; this often results in improvement of health, and in some cases even of cure. It is surely not for us to throw on poor struggling mortals the cold douche of cynical semi-scientific scepticism, but rather to encourage then in their spontaneous efforts, and to let them see that we can supplement their own natural powers from outside.

"With this new knowledge of the 'Vis medicatrix', of its mechanism and of its chemistry, we must realize that our control over our disease is enormously increased, and that there is a far brighter and less suffering future for the sons of men." (*Modern Medicine and some Modern Remedies*—T. B. Scott, pages 137–140).

CHAPTER VII.—AYURVEDA AS AN ART.

Great achievements of the Past.

40. It will be convenient to consider the achievements of medicine (whether Indian, European or any other) under its two broad divisions, viz., medicine (which will include not only general medicine but also special medicine such as treatment of the Diseases of Women and Children, Mental diseases, Toxicology, etc.) and Surgery (which will include not only General Surgery but also Special Surgery, such as Midwifery, Ophthalmology, and the like). That, in both of these divisions, Ayurveda

achieved great things very early in the history of civilization is an undeniable historical fact; as the Calcutta University Commissioners truly observe in their report (Volume 5, page 58), "The ancient system possessed an imposing treasure of empirical knowledge and technical achievement, which cannot be safely ignored even in these days of rapid progress." In the department of Medicine few will be disposed to question the high achievements of Ayurveda because it is a matter of common observation that, even in its admittedly decadent condition of the present day, Ayurvedic Medicine is satisfying in its own way the medical needs of nearly 90 per cent of our population; there are, however, people who are apt to think poorly of the past of Ayurvedic Surgery because its present is so poor; to these the following extracts from the Encyclopædia Brittanica (Volume XXII, page 672—9th edition) cited by Dr. Yamini Bhushan Roy in his written evidence, may afford instructive reading:—"In both branches of the Aryan stock, surgical practice, as well as medical, *reached a high degree of perfection at an early period.* The correspondence between the Susruta and the Hippocratic collection is closest in the sections relating to the ethics of medical practice; the description, also, of Lithotomy in the former agrees almost exactly with the account of the Alexandrian practice as given by Celsus. But there are certainly some dextrous operations described in Susruta (such as the Rhinoplastic) which were of native invention; the elaborate and lofty ethical code appears to be of pure Brahmanical origin; and the very copious Materia Medica (which included arsenic, mercury, zinc, and many other substances of permanent value) does not contain a single article of foreign source. Surruta describes more than one hundred surgical instruments made of steel. They should have good handles and firm joints, be well polished and sharp enough to divide hair; they should be perfectly clean, and kept in flannel in a wooden box. They included various shapes of scalpels, bistouries, lancets, scarifiers, saws, bone-nippers, scissors, trocars, and needles. There were also blunt hooks, loops, probes (including a caustic-holder), directors, sounds, scoops and forceps (for polypi, etc.) as well as catheters, syringes, rectal speculum, and bougies. There were fourteen varieties of bandage. The favourite form of splint was made of chips of bamboo bound together with string and cut to the length required. Wise says that he has frequently used "this admirable splint," particularly for fractures of the thigh, humerus, radius and ulna, and it has been subsequently adopted in the English army under the name of the 'patent rattan cane splint.' Fractures were diagnosed, among other signs, by crepitus. Dislocations were elaborately classified, and the differential diagnosis given; the treatment was by traction and counter traction, circumduction, and other dexterous manipulation. Wounds were divided into incised, punctured, lacerated, contused, etc. Cuts of the head and face were sewed Skill in extracting foreign bodies was carried to a great height, the magnet being used for iron particles under certain specified circumstances. Inflammations were treated by the usual antiphlogistic regimen and appliances; venesection was practised at several other points besides the bend of the elbow; leeches were more often resorted to than the lance; cupping also was in general use. Poulticing, fomenting, and the like were done as at present. Amputation was done, now and then, notwithstanding the want of a good control over the hæmorrhage; boiling oil was applied to the stump, with pressure by means of a cup-formed bandage, pitch being sometimes added. Tumours and enlarged lymphatic glands were cut out and an arsenical salve applied to the raw surfaces to prevent recurrence. Abdominal dropsy and hydrocele were treated by tapping with trocar, and varieties of hernia were understood, omental hernia being removed by operation on the scrotum. Aneurysms were known but not treated.

Besides the operations already mentioned, the abdomen was opened by a short incision below the umbilicus slightly to the left of the middle line, for the purpose of removing intestinal concretions or other obstruction (Laparotomy); only a segment of the bowel was exposed at one time; the concretion when found was removed, the intestine stiched together again, anointed with ghee and honey, and returned into the cavity. Lithotomy was practised without the staff. There was a plastic operation for the restoration of the nose, the skin being taken from the cheek adjoining, and the vascularity kept up by a bridge of tissue. The ophthalmic surgery included extraction of cataract. Obstetric operations were various, including Cæsarian section and crushing the footus.

The medication and constitutional treatment in surgical cases were in keeping with the general care and elaborateness of their practice, and with the copiousness of their materia medica."

"Even the up-to-date modern surgeons of to-day" continues Dr. Roy "will be more up-to-date and modern if they will take the trouble to acquaint themselves with our learning on the subject. The chief difficulty is that this valuable learning of our ancients is contained in books written in Sanskrit, without a knowledge of which it is not now possible to get at originals; another difficulty is that the texts are mostly aphoristic and require elucidation and elaboration by competent Gurus, who are now unfortunately very few and far between. It is no doubt true that the Art of Surgery has now undergone decay but it can be easily revived. Though the Art has decayed, it can be resuscitated and rendered efficient in practice, by conducting Ayurvedic research along right lines, and taking the aid of modern surgery and modern science generally, wherever they are useful."

Is Ayurveda self-sufficient at present?

41. This brings us at once to the consideration of the question whether, and if so, how far, Ayurveda is self-sufficient at present. Some claim that indigenous systems *are* even now self-sufficient and that their followers are able, by purely medical means, to cure all curable diseases, including those which the Western trained doctors classify as surgical ailments and treat by surgical measures. It may be so, I do not know. But the statement seems a large order, more especially when we remember that Hindu Medicine itself gave great prominence to Surgery, and that every student of Hindu Medicine is enjoined to study "Susruta Samhita" —a treatise primarily devoted to surgical ailments. The question cannot, however, be decided by mere argument. In the last resort, it has got to be proved by verifiable testimony in hospitals, or elsewhere, where there are facilities for recording authentic clinical observations. There are, however, other exponents of indigenous systems, who, though they claim that, very early in history, their systems, reached a high level of real scientific and technical achievement, even in such branches of Medicine, as Surgery, Midwifery, and Ophthalmology, are nevertheless prepared to admit, that in the immediate present, it is necessary to utilize the services of the Western system in these directions. They, however, entertain the hope that this phase is only temporary, and that, with the renaissance, consequent on State-encouragement, the indigenous systems would soon become self-sufficient. That the Science as well as the Art of surgery had once reached a high level of perfection in ancient India may be freely admitted; but, can it be denied that the art has at present decayed to such an extent that it is not equal to the task of ministering to the surgical needs of our teeming millions? When the question of providing adequate medical relief is at issue, it is not enough to show that ancient systems reached a high level of surgical or obstetrical excellence in the days of their ancient greatness; harking back to the glories of the past has its uses; but from the standpoint of providing adequate medical relief, however, the question of questions is whether the ancient Art exists here and now as a living reality, and whether, like the Art of the Westerners, it is equal to the task of dealing with, not merely medical ailments but with surgical, obstetrical and other illnesses as well. In this connexion it is significant that even so enthusiastic an exponent of indigenous medicine as Mahamahopadhyaya Kaviraj Gananatha Sen found it necessary to allude to the present state of indigenous medicine, in the following terms:—"Whatever may have been the past glory of Ayurveda it would be self-deception on our part to think that we still sit on a high pedestal. The fact is unfortunately just the other way. The number of Ayurvedic physicians in India is legion but soundly educated exponents of the ancient system are not numerous. Besides, there is yet a good deal of conservatism, which is contrary to the liberal spirit of Ayurveda and which must be overcome. Much of the old valuable literature has been lost and what exists is not often studied in a scientific spirit. If the sound principles and methods of treating diseases with the time-honoured recipes of reliable efficacy were not there, the Ayurvedic system of medicine would have been dead by this time in the struggle for existence. So, let us not be slow in recognizing the crying need for reform. We may have once made great progress in Surgery but we must confess that we now lag sadly behind . . . And even in the

great departments of Medicine and Pharmacy which are our great pride and mainstay, we must work hard to demonstrate and utilize the principles of medicine that we have in our books. One may therefore be permitted to suggest that it is not in the interests of the public, the promotion of whose well-being must alone be our paramount consideration, to shut out *any* useful means of medical, surgical or other relief, no matter whether it is of the European or of any other denomination." Even assuming for a moment that such branches of indigenous medicine as surgery and midwifery were not merely the forgotten arts that they now are, but real, living arts of their best days, is it in the interests of the public or the promotion of scientific knowledge generally that we should decline to benefit by the undeniable achievements of modern surgery? Even granting for the sake of argument that the methods of diagnosis known to practitioners of indigenous systems are sufficient for their purpose, is it in the interests of humanity or of the advancement of learning generally, that we should decline to make such use as we can, of the laboratory methods of Western medicine, or taboo the use of such instruments of proven utility like the Stethoscope, the Microscope, the Spectroscope, the Microtome, the X-rays, the Polygraph, the Electro-Cardiograph, the Ophthalmoscope, the Cystoscope, the Bronchoscope, the Epidiascope and the like? Even assuming that the medical therapeutics of the indigenous systems is efficient and sufficient for their purposes, is it in the interests of the public at large that we should decline to consider the value of electrical or radium therapy or the use of quinine in malaria, of emetine in dysentery and of antimony in kala-azar, merely because they are introduced by the followers of Western medicine? After all, is it necessary to be ever talking of rival systems of medicine, as though scientific truths can possibly vary with the orient of this, that or the other geographical unit? If the one-pointed search after truth is every where the aim of all scientific endeavour there can be but one system—one without a second of any science, whether it be physics, chemistry, biology, medicine or any other. Theories and hypothesis have been, and can be many, but truth is one; it is neither Eastern nor Western but universal. It cannot be that water is H_2O in the West and something else in the East. Theories and methods of Easterners may well differ from those of Westerners and there may also be different schools and sub-schools of thought among the Easterners and Westerners themselves. Wherever knowledge is imperfect, as it undoubtedly is in medicine, such differences of opinion, theories and hypotheses are inevitable; but, no true scientist—Eastern or Western—would ever reject a proposition, merely because it is advanced by one born or living in an orient different from his own; if it is *proved* that the other view is better than his own, he would not have the least hesitation in loyally accepting it; ever since the dawn of history there has been free and unrestricted communion between the East and the West in the domain of advancement of learning; in Medicine, as in other branches of knowledge, each has freely and joyously given to, and taken from, the other in the past; even when Kings were engaged in mortal strife, the men of Medicine were freely fraternising as members of that universal brotherhood of knowledge and wisdom, which knows no distinctions of race, creed or community. The supreme object of all students of Medicine—Eastern or Western—is the maintenance of health, and prevention and cure of diseases. There is no better way of working towards the fulfilment of this object than to think in terms of the whole of humanity, and of no lesser unit, such as the European, the Asiatic and the like, which sometimes, so unfortunately—and may I say, so unscientifically,—divide man from fellow-man, even in the colourless domain of science. Many, many years ago, Charaka laid down the following dicta for the guidance of his disciples:—

तदेव युक्तं भैषज्यं यदारोग्याय कल्पते ।
स चैव भिषजां श्रेष्ठो रोगेभ्यो यः प्रमोचयेत् ॥ (Charaka, Sutrasthan, Chapter I).

न चैव ह्यस्ति सुतरामायुर्वेदस्य पारम्, तस्मादप्रमत्तः शश्वदभियोगमस्मिन् गच्छेत् । कृत्स्नो हि लोको बुद्धिमतामाचार्यः शत्रुश्चाबुद्धिमतामतश्चाभिसमीक्ष्य बुद्धिमताममित्रस्यापि धन्यं यशस्यमायुष्यं पौष्टिकं लौकिकमभ्युपादिशतो वचः श्रोतव्यमनुविधातव्यश्चेति ॥ (Charaka—Vimanasthan—Chapter VIII).

"That alone is the right treatment, which makes for health; he alone is the best doctor who frees us from diseases . . there is no end to the science of medicine; hence needfully, shouldst those devote thyself to it. Skilfulness in practice should be acquired from others without feeling any humiliation. Unto men possessed of intelligence, the entire world acts as a preceptor; unto men destitute of intelligence, the entire world acts as an enemy. Hence, the wise should listen to and follow the counsels of even a foe when they are instructive, praiseworthy, health-promoting, and well-suited to the conditions of the people".

Can there be wiser counsels for us to follow than what is contained in the above and may we not also adopt the view that, in so far as the one common ideal of all Systems of Medicine is the preservation of health and prevention or cure of ill health, there can really be but one system of medicine, of which the many existing 'systems' are but parts, each part being more appropriately looked upon as a special 'school' of thought rather than as an independent system of medicine?

STATE-RECOGNITION AND STATE-AID.

42. As regards the question of State-recognition and State-encouragement of the Indian systems of medicine, the Government is vitally interested in seeing that the money voted for the promotion of medical relief is not *knowingly* spent on erroneous practices; I use the word 'knowingly' advisedly; because it is possible that unknowingly money is spent on practices which will later on be found to be useless or even worse; in the practice of an imperfect science like medicine it is enevitable that certain practices are more or less of the nature of experiments, honestly extolled to the skies one day but condemned on the next, because they were tried and found wanting. As the British Medical Journal warned the medical profession so long ago as 1911 "Remedies and modes of treatment, like systems of philosophy, or fashions in dress, have their little day and cease to be. Back numbers are graveyards of departed theories of which the various forms of quackery are the ghosts." So far as the allocation of public funds are concerned, it does not really matter whether a case of illness is called Tuberculosis or Rheumatism, attributable to certain specific germs and treated by methods based on that theory of causation; or it is called Rajayakshma or Vata Vyadhi, attributable to specific varieties of Doshic derangements and treated by methods based on that theory; but what does vastly matter is the question of cure or relief obtained—that is to say, the question whether this or that or the other system is effective in providing cure or relief of the particular diseases under reference—no matter whether the diseases are attributed to certain specific germs demonstrable by laboratory methods or to certain specific forms of doshic derangement, ascertainable by clinical methods. It is difficult to see how we can give a definite answer in favour of one or other of the several schools or systems under reference, unless we have comparative statistical records of patients treated, side by side, by each of these systems, either at our Presidency hospitals or any other institution, where adequate arrangements can be made for the due maintenance of scientific records for purposes of comparative study. There are critics, however, who would object to such an arrangement on the ground that thereby we would be virtually recognizing that a *prima facie* case has been made out, while some go far as to hold that this would really mean the handing over of our 'credulous' patients to the practice of dangerous quackery. So far as the latter objection is concerned, it is really a case of begging the question, and can only be advanced by people who have unscientifically condemned the Indian systems in advance, without caring to test its claims with the open mind of the true scientist. Moreover, are these critics aware that among the poor 'credulous' folk who still put their strong faith in the systems which, in the fullness of our knowledge, we would equate to quackery, there are persons of great light and learning in all walks of life—great scientists of world-wide reputation, learned judges whose skill in weighing evidence has been extolled by eminent British Jurists, distinguished statesmen, able administrators and great leaders of our Legislatures, Princes, Zamindars and Merchant-Princes of all grades, and many others noted for their deep thinking and sound judgment?

Efficiency and Economy.

43. Then again, is not a *prima facie* case made out in favour of Ayurveda by the noteworthy records of the few dispensaries of the Indian systems that are now being maintained by non-Governmental agencies in the different parts of the country? A number of such institutions exist even in our own Presidency town; and though greatly hampered for lack of State-recognition and sufficient funds, they are nevertheless holding their own against the comparatively well financed dispensaries maintained by the State and the Corporation, and are popular among all sections of our people, besides being decidedly cheap, as may be seen from the records of a few of these institutions, published in Appendix VII. I give below a summary of the statistics of only one of them, viz., the Lee Chengalvaraya Naicker's Free Ayurvedic Dispensary, Vepery, Madras :—

Number of patients treated (from July 1921 to June 1922) is 122,238—

This number is made up of—

Hindus		94,983
Eurasians		4,470
Christians		19,200
Muhammadans		3,585
Average daily attendance		335
Cost of Medicine	Rs.	1,375–13–9
Cost of maintenance	,,	3,765–14–9
Average cost per head per day		8 pies.

It is instructive to compare the figures given above with the corresponding figures for the Bauliah Nayudu Dispensary—the most popular among the dispensaries in Madras City worked on the Western systems and situated in the same neighbourhood as the Chengalvaraya Naicker's Ayurvedic Dispensary referred to above :—

Total number treated		37,626
Total expenditure	Rs.	7,058
Salaries	,,	3,385
Medicines	,,	3,453
Miscellaneous	,,	220
Average cost per head per day, roughly	As.	3
Average cost per head per day for the Corporation dispensaries of the City taken as a whole.	,,	6–2

We have likewise the undeniable testimony of the results obtained in those State-recognized and State-aided institutions which are maintained by some of our Indian States, notably Travancore and Cochin, the former of which also maintains a Government Ayurvedic Medical College with a hospital and dispensary attached to it. Is this not valuable *prima facie* evidence, especially, when we remember that no less than 170,641 cases (including 5,190 cases of poisoning, the treatment for which is more or less a speciality in Malabar), were treated during the year 1920–21 in the grant-in-aid Ayurvedic institutions of the State, while 115 in-patients and 29,151 out-patients were treated during the same period at the State Ayurvedic hospital and dispensary, Trivandrum? Among the in-patients, 82·4 per cent were cured and 12·8 per cent relieved, while death-rate was as low as 0·9 per cent. Below, I give corresponding figures for the Government General Hospital and the Government Rayapuram Hospital, Madras, the reason for selecting these institutions for purpose of comparison being, that they are to Western Medicine what the Trivandrum Hospital is to Ayurveda—that is to say, they are centres of medical relief which act also as centres of Medical Education. In instituting this comparison I do not, of course, mean to suggest in the very least that strict comparisons can be made between the statistics of institutions that differ so much in size, staff, organization and so on; but, unfortunately we have at present no other comparisons to institute :—

	Trivandrum Ayurvedic Hospital.	Government General Hospital, Madras.	Government Rayapuram Hospital, Madras.
Total number of in-patients treated	115	8,358	4,861
Do. out-patients ..	29,151	60,648	53,783
	PER CENT.	PER CENT.	PER CENT.
Death-rate among in-patients ..	0·9	6·99	10·35

	Trivandrum Ayurvedic Hospital.			Government General Hospital, Madras.	Government Rayapuram Hospital, Madras.
	*RS.	† CHKM.	‡ CASH.	RS.	RS.
Total cost of maintenance ..	12,588	5	5	6,82,924	2,31,324
Salaries .. Medical officers.				1,01,077	30,100
Salaries .. Nurses	1,667	23	2	74,581	24,177
Salaries .. Inferior servants				71,752	24,387
Total salaries	1,667	23	2	2,47,410	78,664
Medicine .. European ..	..			75,622	22,798
Medicine .. Bazaar	9,000	0	0	6,712	1,091
Total medicines	8,842	1	8	82,334	23,889
Diet	428	0	0	1,19,960	59,028
Miscellaneous	1,717	9	0	1,36,685	92,541

The other statistical details are found in Appendix VII. These statistics also serve to show clearly that the institutions of Indian systems are decidedly economical, considering their efficiency in holding their own against institutions of Western systems working side by side with them ; this is an aspect of the question which cannot be ignored, especially at a time when our financial distress is such that we find it difficult to maintain in good condition even those few institutions of the Western system which minister to not more than 10 per cent of our population, and the question of extending this costly system to the remaining 90 per cent is beyond the wildest dream of even the most optimists among us. Looking at it from this standpoint, is it not necessary for those who are interested in extending medical relief to the whole of our general public to explore to the full the possibilities of the Indian systems, which appear so temptingly economical, and through which alone, if at all, the State may, as things stand at present, hope to bring medical relief within the reach of every body and not merely a small 10 per cent of our teeming millions ?

After all, is it in the interests of Science or suffering humanity that we continue to ignore the claims of these systems of medicine which continue to minister to the medical needs of less than 90 per cent of our population, and that, under conditions which would have killed them out of existence if they had not in them certain inherent excellences which make them live and even thrive in a limited way, under the most unfavourable circumstances which they are now subjected to ? They now suffer, on the one hand, from lack of recognition and patronage by the State and others who should have been its natural patrons, while, on the other, there is the severe handicap from unequal competition with a ‘ rival ’ favoured with the monopoly of State-recognition and State-support. Under these circumstances, the wonder is not that the Indian systems have decayed, but that they are living at all. Is it in the interests of Science or suffering humanity, I ask, to ignore systems, whose achievements, even under these most depressing conditions, are such that they are in demand not only by the vast majority of our masses who would, but for their existence, go without any medical aid at all but also by persons of light and learning in all walks of life ? Moreover, some practitioners of even the Western system itself especially in Bengal, United Provinces, Punjab, etc., freely call in the practitioners of the Indian systems for the treatment of not only their own private cases (specially the chronic ones) but also of the members of their own family. The following extracts from the written evidences of Mahamahopadhyaya Kaviraja Gananatha Sen are intended to support the statement that I have made above regarding the efficacy and comparative cheapness of the Ayurvedic treatment :—“ As to the general efficacy of Ayurvedic treatment, I think there can be little doubt. In Calcutta, the great home of western culture, Ayurvedic practitioners thrive in a remarkable manner and are the strong rivals in practice of the Presidency Surgeons and Professors of the Medical College. Not only in Calcutta but all over India learned Ayurvedic physicians stand out as fully the peers of their Western colleagues, earning Rs. 500 to Rs. 1,000 per diem when their services are engaged by the ruling princes and nobility of India. Where there are well-equipped Ayurvedic charitable dispensaries, side by side with similar

* 1 Sircar rupee = annas fifteen and pies nine nearly.
† 1 Chakaram = six pies nearly.
‡ 1 Cash = $\frac{1}{2}$ pie nearly.

allopathic dispensaries in a town, the attendance in the former goes on increasing steadily to an extent which would seem to be incredible. The statistics of the Ayurvedic dispensaries in Madras and Calcutta would show this clearly.

In private practice the average Ayurvedic practitioner often does better than his Western-trained brother. Besides, Western-trained medical men very often request the services of their Ayurvedic colleagues in chronic intractable cases, not only among their patients but also among their own family members. This is everyday experience with me and several of my colleagues in Ayurvedic practice. Hundreds of patients, declared incurable and cured under Ayurvedic treatment, would bear testimony to the unique success of Ayurvedic treatment. . . From the records of some so-called incurable cases kept in my clinic, I am able strongly to assert that the efficacy of Ayurvedic treatment in reputed hands is so remarkable that all sections of people, the prince and the peasant, Indian and European, resort to it freely ; I find, in my own practice, that I daily have to attend difficult cases in the houses of at least two or three allopathic doctors of Calcutta. This is not the experience of myself alone, but also of Ayurvedic practitioners trained purely on orthodox lines, many of whom still thrive as the favoured family physicians of the rich and the noblemen of Bengal . . .

The cost of treatment according to the indigenous systems should be considered under two heads :—

(1) Treatment of well-to-do people.
(2) Treatment of the poor.

For the former, the practitioners of both the Western and Eastern systems are in the habit of prescribing costly preparations ; but, on the whole, if the modern costly methods of diagnosis are taken into account, Ayurvedic treatment is certainly cheaper even for well-to-do patients.

(2) For the poor, the indigenous systems are by far the cheaper, as there are plentiful supplies of Ayurvedic drugs available in every part of India and they are used mostly in the fresh form as juices, decoctions, etc., which eliminate costly pharmaceutical processes including the addition of spirits and bottling, labelling, advertisements, etc. . . From the comparative statistics of the cost of treatment collected from the records of Ayurvedic charitable dispensaries in Calcutta and Madras, it has been found out that the average cost is about 5 to 6 pies per head per day and would never exceed nine pies ."

Ayurveda well worthy of study and investigation.

44. In any case, it does not seem to me to be in the interests of Science or suffering humanity to refuse to explore to the full the possibilities of systems of medicine which have been referred to in the following terms by so competent a body of critics as the members of the Calcutta University Commission presided over by Sir Michael Saddler :—

" That the entire system of indigenous medicine, as practised in India, affords a fruitful field of study and investigation, is indeed clear from the testimony of many competent authorities. Dr. Hoernle, in the preface to his ' Studies in the Medicine of Ancient India,' observes :—' Probably it will come as a surprise to many, as it did to myself, to discover the amount of anatomical knowledge which is disclosed in the works of the earliest medical writers of India. Its extent and accuracy are surprising, when we allow for their early age, probably the sixth century before Christ, and their peculiar methods of definition. In these circumstances the interesting question of the relation of the medicine of the Indians to that of the Greeks naturally suggests itself. The possibility at least of a dependence of either on the other cannot well be denied when we know as a historical fact that two Greek physicians, Ktesis about 400 B.C. and Megasthenes about 300 B.C., visited or resided in Northern India.'

" Dr. Neuberger in his ' History of Medicine ' writes :—' That Greek medicine adopted Indian medicaments and methods is evident from the literature. The contact between the two civilizations first became intimate through the march of Alexander and continued unbroken through the reign of the Diadochi and the

Roman and Byzantine eras. Alexandria, Syria and Persia were the principal centres of intercourse. The Indian physicians' means and methods of healing are frequently mentioned by Greco-Roman and Byzantine authors, as well as many diseases endemic in India but previously unknown. During the rule of the Abbasides, the Indian physicians attained still greater repute in Persia, whereby Indian medicine became engrafted upon the Arabic, an effect which was hardly increased by the Arabic dominion over India. Indian influence in the guise of Arabic medicine was felt anew in the West. The apparently spontaneous appearance in Sicily in the fifteenth century of Rhino-plastic Surgery bespeaks a long period of Indo-Arabian influence. The plastic surgery of the nineteenth century was stimulated by the example of Indian methods, the first occasion being the news derived from India that a man of the brick-makers caste, had, by means of a flap from the skin of the forehead, fashioned a substitute for the nose of a native.'

"Similar testimony is furnished from a very different quarter: The late Surgeon-General, Sir Pardey Lukis, sometime Principal of the Medical College, Calcutta, and later Director-General of the Indian Medical Service, said in the course of one of his public utterances :—' I wish to impress upon you most strongly that you should not run away with the idea that everything that is good in the way of medicine is contained within the ringed fence of allopathy or Western medicine. The longer I remain in India and the more I see of the country and the people, the more convinced I am that many of the empirical methods of treatment adopted by the Vaids and Hakims are of the greatest value, and there is no doubt whatever that their ancestors knew ages ago many things which are nowadays being brought forward as new discoveries. For instance, during the last few years, there has been a considerable amount of talk about what is known as depurating, that is to say, the depriving of the system of salt. This arose from certain experiments carried out by Widal and Javal, as a result of which it is recognized that in all cases of dropsy the greatest benefit can be obtained by restricting your patients to an entirely salt-free dietary. There is nothing new in this. This was known thousands of years ago in the East, and any Hakim would have told you long before Widal or Javal made their experiments, that salt is contra-indicated in all dropsical affections.'

"Equally emphatic is the assertion of Dr. Harold Brown, formerly of the Indian Medical Service, that 'there are a great many indigenous drugs which are of extreme utility but are little known to the students of Western medicine.' No arguments are needed to establish the position that a system which is described in these terms by some of the most distinguished exponents of the Western system of Medicine should be cultivated in an Indian University from the point of view of a historical, critical and scientific student." (Report of the Calcutta University Commission—Volume IV, part II, pages 56-7.)

There are some people however who say that they are ready to incorporate into their Pharmacopœa such of these indigenous drugs and methods of treatment which are found efficient in practice but have no patience with the rest of the Indian systems themselves; in other words, they would take in the Art, but would shut out the Science; and this, to my mind, is unscientific, and may lead, as I have shown elsewhere, to dangerous quackery. You cannot talk in the same breath of cutting down the tree of Indian systems but longing, at the same time, for their sweet fruits.

CHAPTER VIII—SUMMARY AND CONCLUSIONS.

It seems to me that, if our object is to bring to bear on the problems of Health and ill-health the best available knowledge that it is possible to have, then we must cease to view the Indian and European systems in any spirit of mutual antagonism or narrow partisanship, but look upon them all as members of a Universal Fraternity in Medicine, the follower of each working devotedly to the promotion of his own system but willing and even eager to teach and learn from the follower of every other, so that, by their united efforts, they may best serve the cause of Science as well as of Humanity; it is of course true that our judgment in this matter is likely to be influenced by such natural bias as, unconsciously to ourselves, we may happen to have towards one or other of these systems; but, much may be done to secure fair treatment for all and favour for none, if we could view things in that detached spirit

of true scientific inquiry, so well portrayed by Prof. Schiller in his essay on *Scientific Discovery and Logical Proof*, where he expresses himself thus :—

" Science could make no progress, either if every novelty were at once condemned and suppressed because of its failure to conform with the accepted doctrine, or if everything new were hailed as true, regardless of its concordance with the old truth, so that the course of science became a series of radical revolutions that had no consistent direction. If it were generally recognized that every claim to new truth, however great the advantage it promises, necessarily entails certain inconveniences, because the old beliefs and notions have to be modified and readjusted—and this may involve too great an effort to be worthwhile, or an effort too great for certain minds—it would be seen that there are two sides to every question, and that both may be in a way legitimate. If, in addition, we recognize that the parties concerned usually have a bias which may render them dangerously blind to the case of the other side, and that both should be admonished to discount their bias duly, we shall have done not a little to secure fair-minded consideration, reasonable discussion, and intelligent choice between the alternatives. What is wanted is, not that the inquiring mind should take no interest in the conclusions it considers, but that, though it cares keenly and even passionately for one of them, it should yet be capable of sufficient self-control to consider fairly the case against the conclusion it favours. This mental attitude is probably best secured by caring more for truth than for a party victory, and is denominated a ' disinterested love of truth for its own sake '."

I may now sum up my review of Ayurveda both as a Science and as an Art, and conclude thus :—

(*a*) *Ayurveda as a Science*—(i) *Methodology.*—The methodology of Ayurveda is strictly logical and scientific : the methods of Pratyaksha and Anumana which it follows can well stand their own against the Deductive and Inductive methods of Modern Science.

(ii) *Preliminary Scientific study.*—A study of the principles of Samkhya, Visheshika, Nyaya, etc., is to Ayurveda what the study of Physics, Chemistry, Biology, etc., is to Western Medicine ; but, it is well for Ayurvedists to become acquainted with the general principles of Physics, Chemistry, etc., especially in their application to modern medical methods, just as it is good for students of Western Medicine to become acquainted with the views of Ayurvedists regarding the evolution of the Atoms, the chemical elements, and the various kingdoms of Nature generally such as the mineral, the vegetable, the animal, the human and so on.

(iii) *Physiology and Anatomy.*—The Thridhatu physiology is quite valid as a scientific conception ; it is eminently desirable that Ayurvedists should supplement their own knowledge, with the fundamentals of the Physiology and Anatomy (both gross and microscopic) of our Westerners, who, in their turn, will do well to benefit themselves by the teachings of Ayurvedic Physiology, Anatomy and Psychology.

(iv) *Aetiology and Pathology.*—The Thridosha theory is quite valid as a scientific conception : the Ayurvedic aetiological classification is essentially subjective and of universal applicability, while that of Western Medicine is essentially objective and limited in its applicability. It is well that each learns to see things from the view-point of the other.

(v) *Diagnosis.*—Ayurvedic Diagnosis stresses clinical investigation while that of Western Medicine is increasingly becoming a matter of Laboratory methods. A harmonious combination of both the clinical and the laboratory methods is the crying need of the hour.

(vi) *Treatment.*—Ayurveda excels in basing its principles of treatment on the accurate prognosis of every diagnostic feature ; its pharmacological theory of Rasa-Guna-Veerya-Vipaka-Prabhava is quite a rational conception, which Ayurvedists have applied to elaborate an admirable scheme of Dietetics and Personal Hygiene. The general principles of Ayurvedic treatment are so universal that they can readily take in every form of treatment that is either already known or will become known hereafter.

(*b*) *Ayurveda as an Art.*—As practised at present, Ayurveda is not self-sufficient, especially in the surgical line, where it now requires the help of Western Medicine ; in the Medical line it is, generally speaking, self-sufficient, efficient and decidedly cheaper than Western Medicine.

From such study of the subject as I have been able to make, it is clear to me that, in the best interests of Science as well as of suffering humanity, it is eminently desirable that the followers of both Ayurveda and Western Medicine should exchange thoughts in every branch of Medicinal Science and Art, and each learn from the other what the other can teach. Having come to such a conclusion, it was a very genuine pleasure to me to know that I have long ago been forestalled in my views by certain eminent leaders of Western Medicine itself—leaders like the late Sir Pardey Lukis, to whom humble camp-followers like myself must naturally look for light and guidance ; I have already cited the views of this distinguished authority as also of others who have been quoted with approval by no less a body of eminent scientists than the Calcutta University Commission presided over by Sir Michael Sadler. Recently I came across the views of another distinguished member of the I.M.S., Colonel Maclaren, with whose plea for co-operation between the followers of the Indian and the European systems, I am so substantially in agreement that I cannot resist the temptation to cite the following extract from an address delivered by him in 1916 to the Vaids and Hakims of Allahabad :—

"When I first came to India I had no idea that your system of medicine has made such advance, but now I know better ; and I much regret, that owing to the busy life I have had to lead during my service, I have not given it that attention and study which its importance deserves. I know that you can diagnose and treat all diseases and that your treatment of chronic complaints is remarkable. Your treatment of such diseases as asthma, ascites, insanity, diseases of the brain, spine and generative complaints is very successful under the climatic conditions of the country and the habits of the people . . As you know India is rich in medicinal products and herbs, many hundreds of which are incorporated in the Indian Pharmacopœa. *I trust that as time goes on and social intercourse advances, there will be greater co-operation amongst gentlemen practising the two systems of medicines ; for we can undoubtedly learn much from each other, for our object is the same, namely, the cure of diseases.*" (Italics mine).

It is also a significant sign of the times that the same note of mutual co-operation, for which Colonel Maclaren pleads so well in the above citation, is also struck in a leading aricle of the *Indian Medical Gazette* for December 1922, where one reads with pleasure the following : "What we look forward to is mutual co-operation : the evolution of a type of tropical medical practice containing elements derived from both Western and Indian sources, combining the best of both and adapted to the country's needs."

To these messages of mutual co-operation between the practitioners of the Indian and the European systems, I can add nothing except to say most fervently "*Amen*", or "Thathastu" as the Hindus have it.

CHAPTER IX—ADDITIONAL NOTE ON THE SIDDHA SYSTEM.

That both the Siddha and the Ayurvedic systems have the same common foundations (including the Thridhatu Physiology and the Thridosha Pathology) may be gathered by comparing the Review of Ayurvedic Medicine given above, with the summary given below of the principles of the Siddha system as prepared by M.R.Ry. Maruthva Siromani Pandit C. S. Murugesa Mudaliyar Avargal, Secretary to the South India Ayurvedic Vaidya Sangham, Madras, and a member of the Tamil Sub-Committee.

"The theory or theories of causation of disease according to the Siddha Ayurvedic system as obtaining in Southern India is based purely upon Thridhatus, that is, in other words, Malas or Doshas, the result of the abnormal functions of Dhatus.

The Dhatus are for maintaining or sustaining the body while they are in equi-balanced condition, and acting and reacting amongst themselves and on the human system as a whole with functions peculiar to them.

The Dhatus are called Malas because they cause wastes such as faeces, perspiration, etc., and also Doshas because they vitiate.

The human body like all other material bodies is composed of the five compound elements, viz., Earth, Water, Fire, Air and Akas (Space) or to be more correct Bhuthas in the Hindu sense.

These compound elements are indispensable for the formation of a human body. They therefore inseparably combining with one another produce not only the most minutest particles called Auns—Jeeva Auns or cells, the requisite materials for the animal body but also discharge in them certain peculiar functional forces called cellular activities. These activities are the guiding principles of mind and body. They are of three kinds (1) creative, (2) protective and (3) destructive forces.

(1) The creative activity in physical body is called Vadha,
(2) The protective ,, ,, Pittha,
(3) The destructive ,, ,, Kapha.

and so in the mental body the activities are being guided by Mukgunams, viz., Satwa, Raja and Tamas; these are nothing but relative terms of the above activities.

The matter and force when thus brought into a union by Nature (prakrithi), they manifest themselves into a Purusha, composed of (1) soul, (2) mind and (3) body.

The all-intelligence, the Soul, though forming the basis for the generative force to act and react on mine and body, to produce mental and physical activities, yet it remains in an independent, undisturbed condition or in one word absolute.

Leaving it out therefore, let us turn to or view the question regarding mind and body. Here we mean the ultra-microscopic activities of mind and body and the purpose they serve. These activities brought on by the nerve centres make the human body worth its name.

The human body thus manifested from the absolute depends, for its continuance in its present relative condition and to produce its functional activity or force, on food materials just like a machine on coal.

A well measured and judiciously regulated supply of food materials made to a complex human machinery undergoes changes—chemical changes—in themselves and causes the production of—

1. Rasas—Chyme or chyle.
2. Raktha—Blood.
3. Mamsa—Flesh.
4. Metha—Fat.
5. Asthi—Bones.
6. Majjah—Marrow.
7. Sukla—Semen (or the vital seed).

These make up and support the body.

During the process of chemical changes in food materials, i.e., from Food to Rasa and in subsequent progressive chemical changes, i.e., from Rasa to Blood, Blood to Flesh and so on; and for these changes there ought to be certain agencies. What are they? They are as under:—

(1) When food materials pass from mouth into stomach and intestines, the muscular action acts on them, so also the actions of the various juices. The action so exerted is essential for the organs to move and act. This action here is due to Vadha.

(2) From the food, that which is essential or substantial or protective to the actions of cells is absorbed or sucked up (by blood). This action is called Pitha.

(3) When all possible essence is absorbed from food by the activities called Vatha and Pitha, then steps in the activity Kapha, the destructive agent. In this instance, what is meant by destructive agent? It is nothing but relieving and changing the food essence Rasa from its original form and converting it to something more preservative, i.e., blood and so on.

The action of Vatha, Pitha and Kapha are therefore found necessary in all chemical changes which blood and other Dhatus undergo.

It is evident that from the very idea of taking food and to its elimination from the system as waste, the actions both of mind and body are there. These activities again remain on the solid rock of three Dhatus.

As the actions of Vadha, Pitha and Kapha correspond to those of moon, sun and agni (fire) respectively, they are also called Chandra, Suria and Agni nadis respectively and also by several other names according to their relative actions.

Summing up, the creative, protective and destructive functions (or to put them in other words, the moving, absorbing and converting actions emanating from the most minutest cells to organs) come to be known as—

(1) the manifestation of Akas and Air (mobile and light) centered in brain and nerves creating phenomena governed by the nervous system besides acting on respiratory, arterio-venous, and abdominal systems involving the principles of motion and energy;

(2) the manifestation of fire, i.e., the production of protective heat necessary in the process of preparing food to rasa, etc., which are the means of cellular tissue formation and maintenance;

(3) the manifestation of water and earth centered all over the tissues regulating heat and preservative fluids indispensable for the development, growth and up-keep of fleshy and bony human frame.

Any slight change * in the functional activities of Vatha, Pitha and Kapha, the guiding principles of physiological life exhibit as functional disorder and thus cause an abnormal feeling or sensation; this we call *Disease*.

* Agastiar Vaidya Kaviyam 1,500
,, Vallathi 600
,, Vaidyavakadam 600
and Kural, etc. 95

The causes that bring on the disturbance or Doshas of Dhatus may be many under different conditions; anyhow they cannot safely escape the following divisions, viz., (1) Internal cause and (2) External influence.

The internal cause is also termed constitutional or direct cause because diseases under this head spring up direct from the disturbance of—

(*a*) Dhatus—Vadha, Pittha and Kapha.
(*b*) Tissues—The seven dhatus referred to above.
(*c*) Gunas—The guiding principles of mind.
(*d*) Malas—The secretive and excretive wastes.

To keep up the said dhatus, etc., undisturbed from their equilibrium the cellular and the intercellular functions must be normal. To preserve this it is generally believed that what the cells inherit and receive as their nutrition must be normal besides their surrounding conditions. Failure in these respects will lead to disease called Karmaroga and inherited and acquired diseases.

No explanation is needed, to know the inherited and acquired rogas but Karmaroga may be a puzzle or non-comprehensive: yet it may fairly be compared with what the Western Science call "inherited diseases in conditions external to the cells."

The Karmarogas, according to the Hindu point of view, are said to be the resultant actions of an individual in his previous births or in the chain of his continuity which are not within the knowledge of the present individual. Now let us see what Dr. T. Henry Green, M.D., says, amounts to:—

"The tendency to inherited disease either exists in the ovum at the commencement of development. . . . As in normal development certain organs manifest their inherited tendencies many years after birth . . . so inherited tendencies to disease may not show themselves until late in life, as in the case in cancer of the breast or of the uterus. It is possible that in many cases the same unrecognized conditions which induced in a parent the morbid tendency handed down continue to act on the offspring, until with or without some obvious exciting cause—the disease becomes evident. We cannot say when this tendency to disease begins—it may have been slowly gaining strength for generations. The fact that no progenitor had the disease in question, if he or she lived well past the age at which such disease usually manifests itself, shows simply that the causes had not acted long enough or with sufficient energy to produce it. It is important to recognise that even inherited disease has its starting point in *conditions external to the cells* of the body."

This observation may fairly be taken to mean Karmaroga.

External Influence.

Diseases under this class are caused by surrounding conditions or environments. They again undergo two subdivisions, (i) Special and (ii) General.

Special or *direct* Diseases coming under this head are the results of—

(i) Accident an abnormal condition of the body caused by external injury such as due to—

(*a*) Mechanical or physical force.
(*b*) Wounds, cuts.
(*c*) Burns and scalds.
(*d*) Pressure.
(*e*) Lightning stroke.
(*f*) Drowning, etc.

(ii) Poisons or infections—due to—

(*a*) Animal.
(*b*) Vegetable or acid.
(*c*) Mineral poisons.
(*d*) Organic parasites.
(*e*) Bacterial organism.

(iii) Hypnotic or sudden mental impluses due to—

(*a*) Incantations.
(*b*) Curses of great souls.
(*c*) Influence of evil spirits.

General or *indirect* Diseases under this head are the outcome of excessive, defective or perverted use or application of—

(*a*) Sense organs.
(*b*) General functions of Organs and Mind.
(*c*) Seasons or Time.

The Principles and Methods of Diagnosis.

The various causes of discases internal or external either excite or cause to excite the Dhatus to become Doshic. Therefore the tridoshas individually or in combination with one or more of the remaining doshas bring out diseases.

To trace the cause of the Dosha, the principles and methods adopted are as under :—

1. Observation—this comprises—
   (*a*) the examination of sense organs ;
   (*b*) the examination by using the senses.
2. Interrogation—

Observation—

(*a*) Smell (nose). Smelling stool, urine, blood, semen, etc.
(*b*) Taste (tongue). Tasting urine, blood, body.

N.B.—In these tastes, the help of crows, dogs, ants, etc., is sought.

(*c*) Sight (eye).—Seeing the physical aspects of the patient, colour, density or otherwise of urine, facial expression, signs exhibited by eyes, tongue, lips, stool, nose, teeth, etc.

(*d*) Touch (skin).—Examining pulse and the temperature by touch.

(*e*) Sound (ear).—Sounds produced by percussion and by applying ears to chest or back to find out the conditions of heart or lungs.

The organs (sense) are also looked into as to their natural colour, etc.

Interrogation.—Is likely to reveal the full history of the case, except in children and dumb persons regarding—

(1) the duration of disease, (2) time or period of the season during which it started, (3) habits, (4) food and drink, (5) age, (6) virility and vitality, (7) parental strength, (8) nature of the sanitary condition of his residence, (9) his strength of digestive organ or function and (10) constitutional likeness or otherwise and so on.

These methods in part or whole would practically help beyond doubt to trace the radical changes due to abnormal functions of the guiding principles of mind and body and the symptoms due to them, with which symptoms and signs the diseases named are treated.

Principles of treatment.—Come under three heads: (1) Mani, (2) Mantra and (3) Oushada.

Mani.—Means chemically changed preparation from Mercury, Arsenic, Uparasas, Salt, etc.

Mantra.—Appealing to deities by chanting sacred words, applying vegetable or minerals charms, using yogic powers such as hypnotism, etc.

Oushada.—Medicinal drugs (1) possessing effects contrary to disease or (2) drugs exciting the very symptoms of the diseases to be cured or (3) drugs suppressing the symptoms partly or wholly or checking further advance and so on.

Methods adopted in treatment.—When the nature of a disease is correctly understood through the means mentioned above, taking the condition of the patient into consideration and the season as well, the oushadas of the above qualities are utilized first with a view *to correct the disturbed doshas* due to direct or indirect causes. In so doing the condition of the patient being predominant, either feeding well or otherwise is to be resorted to with appropriate diet—a chief point; and also with the help of such medicines as would increase the vital condition of the patient if he is too weak in our treatment; but if he is fatty due to excessive nutrition, methods like purgation, etc., would be followed.

The medicines required for treatment are many prepared from the various plants and herbs, salts, arsenics, uparasas, animal bodies, metals, gems, etc.

Number of forms of medicines prepared.—From plants 33, from metals, etc., 12; these are used in medicinal cases. There are 21 preparations from the drugs of the vegetable mineral and animal kingdoms for surgical cases.

These main divisions consist of several sub-classes taking into account different forms slightly changed from the original in quality, odour, colour, etc.

Preparations of medicines thus made from (1) plants and herbs, (2) salts, (3) uparasas, (4) animal bodies, (5) arsenics, (6) metals, (7) metalic and arsenic extracts, (8) mercury, each respectively excel one over the other in strength.

(c) We hold the view that indigenous systems of treatment are more efficacious in certain conditions than other systems, say in cases like consumption, diabetes, nervous diseases, leprosy, diseases of spleen, cancers and paralysis, etc., etc.

To the question how far our theories would stand the test of modern scientific criticism our answer is as follows:—

"Science is always understood to mean knowledge; knowledge is based upon experience: when this appeals to humanity it is knowledge and therefore scientific. The measure of test cannot be out of or beyond direct perception and inference. By these tests our experiences stood and are still standing from ages. The experiences so gained are written down in books; if it is not acceptable, what else? How else could parents, teachers and professors deal with children, pupils and students put under their care if they are to be satisfied without Apthamoli or Sabdhavachiyam? It is a thing for the scientists themselves to answer. Our theories would certainly stand any scientific test in the world provided our theories are clearly understood and then tested."

From the above summary, it should be clear that the general principles of the Siddha system as known at the present day are the same as those of ayurveda. But, historically, it is not at all unlikely that the former has in it certain features, characteristic of Dravidian and Post-dravidian civilisations, just as the latter has in all probability certain features distinctly Aryan or semitic in origin. But at the present day the practices of both are so inextricably intermingled that it is extremely difficult to separate the one from the other. For instance, there are records to show that the mineral preparations for which the Siddhas are famous were being used by the Ayurvedists of the Himalayan plateaus and the Gangetic Valleys, from very early times; so too, there are records to show that even the earliest known Siddhas

were quite conversant with the use of those Himalayan and other vegetable drugs for which the Ayurvedists are famous. It would certainly be very interesting to know the *special* contributions of the Siddhas and the Ayurvedists to our common stock of the knowledge of Hindu medicine; but, such an investigation is quite beyond my limited equipment, requiring as it does, a capacity for Historical and Antiquarian research for which I have not the least pretensions. In the popular mind, however, the Siddha system is generally associated with certain special features such as the following :—

(1) *Literature.*—It has a rich and extensive literature written in Tamil, where the subjects of symptomatology and the examination of pulse seem to be dealt with in greater detail than in the Ayurvedic literature of Samskritists. In any case, the examination of the pulse seems to be cultivated with special assiduity by the practitioners of the Siddha system.

(2) *Iatro-chemistry.*—There is clear evidence that this subject was pursued with special interest by the Siddhas; it is claimed that their achievement in chemistry was greater, and dated from a much earlier period than that indicated by Sir P. C. Ray, in his monumental work on 'The History of Hindu Chemistry'. It is very much to be desired that the knowledge on this subject, which is now locked up in our Tamil literature, be made available by English translations or otherwise, to scholars and scientists of the eminence of Sir Ray, who alone are gifted with that penetrating vision that can see and interpret for the benefit of modern science and present-day humanity, such of those forgotten truths as may remain hidden in our ancient writings.

However this may be, there is no denying the fact that, even in modern days, the practitioners of the Siddha system known the secret of using mercury, arsenic and other powerful 'poisons' in such forms as eliminate, so to speak, their 'poisonous' properties but at the same time concentrate their beneficial ones; but the dangers of quackery are much greater in the case of these minerals than in that of vegetable drugs; for, the specialities of the Siddhas are very potent remedies which, while they act beneficially when used by those who base their art on their science and pay scrupulous attention to the form, the dosage, etc., of the drug used, as also to the rules of dietary, exercise and other observances that are to be strictly pursued, are at the same time capable of causing untold harm if used by people who are not sufficiently versed in both the science and the art of their system. In the hands of the experts of this system, the cases of 'mercurialism', 'arsenic poisoning', etc., are as rare as they are common in the hands of its quacks. It is for this reason that some Ayurvedists (specially of the Malabar school) prefer to confine themselves solely to the use of vegetable remedies, which, even when used unscientifically by quacks, do not cause as great an evil as the very powerful Siddha specialities are generally feared to do, unless they are used by those who are well-versed in both the science and the art of the system. It is also likely that the idea prevalent among some Ayurvedists that, as a rule, recourse must first be had to vegetable remedies, and it is only when they fail or the disease has progressed too far, that the Siddha treatment should be undertaken, has its origin in the belief that the potency of the Siddha remedies for good is as great in the hands of its experts, as their potency for evil, in the hands of its quacks.

CHAPTER X—AN ADDITIONAL NOTE ON THE UNANI SYSTEM.

Historically, the unani system seems to have been founded on Ayurveda, serving in its turn as the foundation of western medicine; such, at all events, is the view that one gathers from the following extract from a paper published on the high authority of Haziq-ul-mulk Hakeem Ajmal Khan Bahadur of Delhi and entitled "The scheme of the Ayurvedic and Unani Tibbi College, Delhi" :—"Arabic medicine was founded on the translations from the Sanskrit treatises, made by command of the Kaliphs of Bagda, 750–960 A.D. European medicine, down to the 17th century, was based upon the Arabic; and the name of the Indian physician Charaka repeatedly occurs in the Latin translations of Avicenna (Ibn Sina), Rhazes (Al Rasi), and Serapion (Ibn Serabi)" (Appendix A.)

"*Arabic medicine.*—The rise of the Muhammadan empire which influenced Europe so deeply both politically and intellectually, made its mark also in the history of medicine. As in the parallel case of the Roman conquest of Greece, the superior culture of the conquered race asserted its supremacy over their Arab conquerors After the Muhammadan conquests became consolidated and learning began to flourish, schools of medicine often connected with hospitals and schools of pharmacy arose in all the chief seats of Moslim power.

At Damascus, Greek medicine was zealously cultivated with the aid of Jewish and Christian teachers. In Baghdad, under the rule of Haroon-ul-Rashid and his successors, a still more flourishing school arose where numerous translations of Greek medical works were made. The names of Mesua or Yahya Ibni Masawaih (ob 243 A.H. 857–8 A.D.) celebrated for his knowledge of drugs and Honen Ibni-Ishaq-el-Ibadi (ob 873) or Joannitius, the translator and commentator of Hippocrates and Galen belong to this period. Certain writings of Joannitius, translated into Latin, were popular in the middle ages in Europe and were printed in the 16th century. At the same time, the Arabs became acquainted with Indian medicine, and Indian physicians lived at the Court of Baghdad. The Islamic Rulers in Spain were not long behind those of the East in encouraging learning and medical science, and developed culture to a still higher degree of perfection. In that country much was due to the Jews, who had already established schools in places which were afterwards the seats of Moslim dominion. From the 10th to the 13th Century was the brilliant period of Abrabian medicine in Spain. The classical period of Arabian medicine begins with Rhazes (Abu Bakr Muhammad Ibni Zakaria-al-Razi 313 A.H. 925-26 A.D.), a native of Ray in the province of Dailam (Persia) who practised with distinction at Baghdad. He followed the doctrines of Galen but learnt much from Hippocrates. He was the first of the Arabs to treat medicine in a comprehensive and encyclopædic manner, surpassing probably in voluminousness Galen himself, though but a small proportion of his works are extant. Rahazes is deservedly remembered as having first described smallpox and measles in an accurate manner. Haly i.e., Ali Ibn-i-Abbas (ob 994), a Persian, wrote a Medical Text Book known as the 'Royal Book' which was the standard authority among the Arabs up to the time of Avicenna, and was more than once translated into Latin and printed. Other writers of this century need not be mentioned here, but the next, the 11th century, is given as the probable though uncertain date of a writer who had a great influence on European medicine, Masua the younger, of Damascus whose personality is obscure and of whose very existence some historians have doubted, thinking that the name was assumed by some Mediæval Latin writer. The work De Simplicibus, which bears his name, was for centuries a standard authority on what would now be called Materia Medica, was printed in 26 editions in the 15th Century and later was used in the formation of the 1st London Pharmocopœia, issued by the college of physicians in the reign of James I. Either to the 10th or the 11th century must be referred the name of another Arabian physician who has also attained the position of a Classic—Abdul Kasim or Abdul Cassis of El-Zahra, near Cardova in Spain. His great work Altasrif, a Medical Encyclopædia, is chiefly valued for its surgical portion which was translated into Latin in the 12th century, and was for some centuries a standard if not the standard authority on Surgery in Europe. Among his own countrymen the fame and position of Abul Cassis were soon eclipsed by the greater name of Avicenna (Ibn Sina).

"Avicenna has always been regarded as the chief representative of Arabian medicine. He writes on Philosophy also, and in both subjects acquired the highest reputation through the whole of Eastern Islam. In Muhammadan Spain he was less regarded, but in Europe his works even eclipsed and superseded those of Hippocrates and Galen. His style and expository power are highly praised but the subject matter shows little originality. The work by which he is chiefly known, the celebrated "canon", is an encyclopædia of medical and surgical knowledge, founded upon Galen, Aristotle, the later Greek physicians, and the earlier Arabian writers, singularly complete and systematic, but is thought not to show the practical experience of its author. As in the case of Galen, the formal and encyclopædic character of Avicenna's works was the chief cause of his popularity and ascendency. In the long list of Arabian medical writers none can here be mentioned except the great names of the Hispanso Moorish School, a school both philosophically and medically antagonistic to that of

Avicenna. Of these, the earliest is Avenzoar or Abumeron, that is, Abu Merwan Abd-i-Malik Ibn Zohr (113-62), a member of a family which gave several distinguished members to the medical profession. His chief work, Al Teysir (facilitatio) is thought to show more practical experience than the writings of Avicenna, and to be less based upon dilectical subtleties. It was translated into latin, and more than once printed, as were some of his lesser works, which thus formed a part of the contribution made by the Arabians to European medicine. His friend and pupil, Averroes of Cordova so well known for his philosophical writings, was also an author in medical subjects and as such widely read in Latin.

Introduction of Arabian Medicine.

The Scholastic period.—About the middle of the 11th century, the Arabian medical writers began to be known by Latin translations in the western world. Constantinus Affricanus, a monk, was the author of the earliest of such versions (1050 A.D.) his labours were directed chiefly to the less important and less bulky Arabian authors, of whom Haly was the most noted. The real classics were not introduced till later. For some time the Salernitan medicine held its ground, and it was not till the conquest of Teledo by Alphonso of Castile that any large number of western scholars came in contact with the learning of Spanish Moors, and systematic efforts were made to translate their philosophical and medical works. Jewish scholars, often under the patronage of Christian Bishops, were specially active in the work. In Sicily also, the oriental tendencies of Fredrick Barbarossa and Frederic II worked in the same direction. Gerard of *Cremona,* a physician of Toledo (1114–87) made translations, it is said by command of Barbarossa, from Avicenna and others. It is needless to point out the influence of the Crusades in making eastern ideas known in the western world. The influence of Arabian medicine soon began to be felt even in the Hippocratic City of Salerno, and in the 13th century is said to have held an even balance with the older medicine. After this time the foreign influence predominated, and by the time that the Aristotelian dialectic, in the introduction of which the Arabs had so large a share prevailed in the schools of Europe, the Arabian version of Greek medicine reigned supreme in the Medical world. That this movement coincided with the establishment of some of the older universities of Europe is well known." (Appendix B.)

So much for the history of Arabian medicine; as for its general features, they may be gathered from the following English translation (prepared by Janab Hakim Abdus Salam Sahib of the Urdu sub-committee) of the authoritative evidence furnished by Zubthathul-Hukama Hakeem Muhammad Kabir-ud-din Sahib Bahadur, Professor of Anatomy, Tibbia College, Delhi. In the popular mind, there is a widespread belief that the Unani system excels in the examination of urine and the mode of administering drugs—especially in relation to their 'heating' and 'cooling' potencies, just as there is a similar belief about the Siddha system that it excels in the examination of the pulse and the use of mineral preparations. The following is the English translation of the Urdu evidence referred to above; it is in the form of answers to questions Nos. 1 and 2 of our questionnaire :—

"*Question* 1.—What is the division or divisions of the indigenous systems of medicine—ayurveda, unani or siddha that you propose to deal with ?

Answer.—I propose to deal with indigenous systems in general and the unani system in particular.

Question 2.—What are the theory or theories of causation of disease according to your system ?

Please favour the committee with your views as to how far your theory or theories stand the test of modern scientific criticism.

Answer.—Before I enter into the field (of discussion) of the theories of causation of diseases according to the unani system, I think it necessary to pause for a while and to ask the alleged scientific critics to kindly enlighten me as to the historical origin of their system and to trace the circumstances under which it has attained its vigorous youthful growth and is being considered with pride as far superior to the unani system. May I therefore crave permission to present to you a cursory outline of the history of the origin of the allopathic system ? "

It is a pity that the practitioners of the allopathic system dazzled by the splendour of new instruments should (in their ignorance of other systems) deem the sacred and time-honoured unani system as barbaric and unscientific. Words fail me to convince you that the same ancient unani system is not only the holy progenitor of the allopathic system but is the system which has fondly nurtured it, so that the latter has attained the state of a beautiful and blooming young maiden charming enough to hypnotise the allopaths.

I can say without fear of contradiction that the allopathic system is virtually and fundamentally the self-same unani system which accompanied the progressive Muslim rule to the ignorant and uncivilized continent of Europe and made a convert of the whole of Europe; and for long its illuminating rays lighted every nook and corner of that continent.

Can Europe alter the history of its medical science? Can it forget the times when European students derived instruction in their medical colleges for centuries together from the self-same honoured unani books which they were then hugging to their bosoms and which in Arabic find a place to-day in the syllabus of our medical colleges? Is it not a fact that the students and savants of France designated the Qanoon (the Canons of Avicenna) 'the key of knowledge and wisdom'? Are not the dogmas and theories of Aflathoon (Plato) Bukhrath (Hippocrates) Arastu (Aristotle) Jalenoos (Galenus) Ibn Rushud (Averrhoes) Zakaria Razi (Rhazes) Shaik Abu Ali Sina (Avicenna) even now given a place of honour and prominence? Do not the best brains of Europe spend their time and energy in pondering and experimenting upon their honoured utterances?

The history of medicines shows that when the tide of the triumphant march of the Muslim monarchs swept over the continent of Europe rendering fallen Spain the seat of the Khilafat, the science and art of medicine followed in its wake and flooded the whole land, and that for long the magnanimity and liberal-mindedness of the Muslim monarchs served to dispel the ignorance and darkness pervading in that land by the torch of their own learning which brought in its train the blessings of material prosperity as well as of science and art.

Then followed the inevitable reaction (common to all earthly institutions) as a result of which the Muslim empire (one enormous in its size) gradually decayed and crumbled, and its boundaries shrunk to the nucleus round which they have grown. With the disappearance of material prosperity, the torch of Muslim science and art faded like an expiring candle and the great centres of learning with which they were lighted became dim and lost their name and fame. It was now the turn of the Europeans who had attained considerable skill and scholarship under the learned Arabian and Muslim professors to rekindle the expiring torch of learning. The sciences and arts thus received a fresh stimulus and reached the zenith of their perfection what with inventions and improvements. No wonder that the unani system developed itself into such a blooming and embellished (healthy and vigorous) maiden (institution) that to-day the allopaths hardly discern in her (it) her (its) old characteristics and features. It is rather difficult for them to believe that their present system is the old unani system attired in the new garb (of accumulated experience). The appearance of the system in this garb and the ignorance (of the history of its origin) is the cause of many a misunderstanding not only in details but also in essentials. Even the most biassed votaries of the Western science cannot deny the historical truth that their system is, in essence, its unani progenitor to which time has made new contributions changing its features to a certain extent.

All evidence therefore points to the allopathic system being the transformed unani system. Can any sensible man, in the circumstances, declare the unani system to be crude and unscientific? If (out of ignorance) he does so, should he not be deemed to indirectly attack the (basic) principles of his own system?

Now I shall deal with the main questions at issue and pass in review the causes of diseases according to the unani system. The up-holders of historical truth maintain that the theories of causation of disease according to the unani system are almost identical with those accepted as a guide by the votaries of the allopathic system and that if at all there is any divergence between the two systems, it is more apparent than real.

The Germ Theory.

What distinguishes one system from the other is the germ theory introduced by the Science of Bacteriology but this does not differ in essentials from the theory of humours inculcated by the unani system. The followers of the latter system hold that diseases are caused by the putrefaction of humours and the resultant deleterious matter, while the allopaths contend that diseases are indirectly produced by bacteria and directly by the poisonous matter (toxin) engendered by them. The distinction thus is only in terms, not in substance.

What then is the effect of this verbal distinction on the treatment employed by either class of medical men ? Practically none. In neither case, are the basic principles affected by the question of treatment and its results. While an allopath treats a case of influenza on the assumption that the disease is caused by specific germs, an indigenous practitioner tackles it on the hypothesis that it is produced by poisonous matter of an extraordinary or epidemic type. So long as each succeeds in his particular line of treatment, the theory of causation of disease based as it is on not dissimilar premises does not make much difference.

Again the treatment of a case of cholera or of plague proceeds on similar lines, the Western doctor administering such medicines as are calculated to destroy what he believes to be the germs of those disorders and the Hakeem or Vaid calling in aid such remedies as have the effect of neutralising what he terms poisonous matter.

Therefore an impartial survey of both systems ought to reveal the superficial character of the existing differences and the hidden nature of the coincidence of the methods of treatment, the latter being attended with success in each case. A common feature will be found to be that the external symptoms of a disease are examined as closely in one case as in the other though they are traced to the toxin of germs or bacteria by the Western doctor and to vitiated humours by his Eastern counter-part. This being so, emphasis cannot but he laid on the outward symptoms, for once they are attacked according to the views formed either of bacteria or of humours, the diagnosis of internal symptoms follows as matter of course. The success attained in each case is of course dependent on the similarity of the methods employed in treatment and this being the acid test, one system cannot claim superiority over the other, much less call it crude or unscientific.

Matter and Germs.

How again does the nominal difference between matter and germs affect the question of symptomology ? What perplexities does it give rise to in the method of treatment ? In either case the results accord with the aim kept in view, i.e., the destruction of the poisonous matter or the toxin of the germ. The supposed difference between the theories of causation of disease, however, has its origin in the invention of the microscope. Before its advent, only the term 'matter,' was being used by Western scientists in describing diseases of various kinds. The microscope has of course revealed the presence of infinitesimal organisms called 'germs' in what was previously termed 'matter' for want of a better nomenclature. If without making use of the microscope, the votaries of indigenous system have necessarily to call the poisonous matter by its original name 'humours,' the systems themselves cannot be condemned on that ground. For in spite of the simplicity of their systems, the Eastern practitioners are capable of rendering as much service in the cause of medicine as those who have armed themselves with powerful microscopes, to say nothing of other modern inventions. The fact remains that notwithstanding the amount of labour and energy expended in the search and investigation of 'germs,' the factors connected with the treatment of fatal diseases, not to speak of those of an acute character, have not undergone any radical change at the hands of the Western practitioners. Nor have the results justified the expectations formed in all cases. There is, for instance, the world-wide epidemic of influenza which is believed to be of quite recent origin. Taking the Indian systems, its Aetiology and Pathology may said to be at once meagre and vague and a biassed doctor of the Western school may jump to the conclusion that no mention is made of it in the indigenous systems. Yet the result of the treatment followed by our

physicians has not been without its encouraging features. Granting that a microscopic examination of the putrified humours in the case of influenza reveals the existence of specific germs, the possession or otherwise of a knowledge of these germs cannot affect the main question of diagnosis regulating the method of treatment in each case. What again if one designates the source of disease 'germs' or 'humours'?

To illustrate the matter further, a doctor equipped with a microscope traces the origin of human life to the 'Spermatozoa' found in the seminal fluid, whereas the man not so armed ascribes the beginning of life to the fluid called 'Semen.' The difference in terminology points as in other cases to the fact that while the former has descended to details and given the matter a specific name Spermatozoa, the latter has adhered to the basic principles and assigned a generic name to the same matter, namely, 'Semen.'

A similar distinction between 'germs' and 'humours' will be found to exist in other cases so far as the description of diseases is concerned.

The Causes of Disease.

The more we discuss the question of causation of disease, the stronger becomes our conviction that there is not much difference in this respect between the unani and allopathic systems.

To quote instances, the external and internal causes known to the allopathic system have their correlatives in the *Karijia* and *Dakiliah* of the unani system.

The exciting and predisposing causes recognized by the allopathic system find their counterpart in the *Asbabi Vasil* and *Asbabi Sabique or Muvid* of the unani system.

The allopathic system ascribes certain diseases to heredity among other causes. We too have a long list of such diseases, the comprehensive term *Amraz-i-Muthavarisa* indicating the same source.

If, in the allopathic system, blows and wounds are grouped under mechanical causes, the same ailments are classified under *Asbabi Tafriqa* in the unani system.

If again the disturbances due to heat, cold, lightning, thunder and other atmospheric changes are included under physical causes in the Western system, the same are merged in *Asbabi-Mizajia* in the Eastern system.

Just as the European system makes use of the term 'chemical causes' to denote the origin of disorders brought on by the improper use of poisonous drugs such as opium, nux vomica, arsenic, croton harmful acids and tinctures, organic and inorganic, the term *Asbabi-Sumiya Keemiavi* describes the cause of similar distempers. In fact there is a whole chapter devoted to Toxicology in our medical books.

The allopaths trace most, if not all, the diseases to the toxins produced by the suppression of the biliary secretion, the retention of urine and the accumulation of indigestible matter, such toxins being termed Endogenous poisons. This does not take us far from the theory of humours or putrified matter on which is based the unani system. Thus if the several causes known to both the systems are carefully analysed, they will be found to agree in essentials, though not in phraseology.

If the allopaths, after a deal of experimentation with germs, have come to lay stress on infection as a prolific source of disease, we too have from time immemorial recognized its potency, the term *Udwa* connoting contagion in our vocabulary. Had not Plato, Hippocrates and Galenus a list of contagious diseases in their own time?

So much for the agreement between the two systems traceable to the identity of their basic principles. Coming to details however the parisitic causes tend as already stated to separate one system from the other. In the diagnosis of diseases we concern ourselves only with such disease-producing parasites as can be seen with the naked eye, whereas the allopaths add to the list of such parasites by making new discoveries with the aid of the microscope. In view of the rapid advance made by the Science of Bacteriology germs have been found in those diseases in which there was not at first the least trace thereof. It is not therefore beyond the bounds of possibility that bacteria should be discovered even in such diseases as are now considered to be immune from them. Seeing that the disorders which were once

thought to be free from germs have later on been traced to their presence and that additions are being made to their number from time to time, it is not fair on the part of the allopaths to condemn old systems merely on the ground that they do not make mention of bacteria in the terms known to themselves.

It will therefore serve no useful purpose to discuss the correctness or otherwise of the germ theory on which the Western system is based, so long as facilities for a practical study of this theory are not within the reach of the eastern systems. Given public and private patronage and necessary facilities for research and experiment, we too are bound to proceed on the same lines and arrive at identical results thereby wiping off the nominal distinction that at present exists between the occidental and oriental systems. If through their vast resources the allopaths have found it possible to reach the goal earlier, it is none of our fault ; for, as long as patronage is withheld from us, things must be as they are.

The germ theory, forming as it were the dividing line between the Western and Eastern systems, does not after all affect the question of treatment of diseases, and it is here that the indigenous medicines play an important part, having proved their efficacy and utility in spite of the vicissitudes of ages from the point of view of health and economy.

Long live the indigenous systems which continue to serve the needs of this vast continent, be the difficulties what they may !

Question 2 (*b*).—What are the principles and methods of diagnosis and treatment followed in your system ?

Please favour the Committee with your views as to the general efficacy of treatment adopted in your system, supporting your system, supporting your statement by facts and figures wherever possible.

Answer.—Again I have to say that allopathic system being founded on the unani system the principles and methods of diagnosis followed by that system is more or less identical with those recognized by the unani system.

Principles of diagnosis.

The following category of synonyms as applied to symptoms of diseases is illustrative as to what has been said of the identity of principles :—

(1) Premonitory or precursory symptoms : *alamathi munzira.*
(2) Direct or endopathic symptoms : *alamathi zathia.*
(3) Indirect or sympathetic symptoms : *alamathi shirkia.*
(4) Local symptoms : *alamathi muqamia and khasa.*
(5) General constitutional symptoms : *alamathi ama and badania.*
(6) Subjective symptoms : *alamathi shaqsia.*
(7) Physical or objective symptoms : *alamathi thabia.*
(8) Pathognomonic symptoms : *alamathi masqasa.*

There are of course certain terms in the allopathic systems for which it is difficult to find corresponding epithets and vice versa. The following are examples of terms which are foreign to the allopathic system :—

(1) *Alamathi jowharia* :—Symptoms that signify a change in the form of an organ.

(2) *Alamathi arzia* :—Symptoms that connote a change in the size of an organ.

(3) *Alamathi thamamia* :—Symptoms that indicate a deviation from the normal functions of an organ.

Methods of diagnosis.

The main difference between the two systems is accounted for by the use of the newly-invented instruments. To ascertain the temperature of the body or to determine the strength of the heart's beat, we feel the patient's pulse whereas the allopaths have recourse to the thermometer for the same purpose. In one case the result is based on experience and hence approximate, while in the other it assures definiteness in view of the confidence induced by the thermometer. The difference of temperature due to the different methods employed is not after all appreciable being not more than a degree in practice. On the other hand a patient exhibits slight

differences in temperature when examined with the aid of thermometers of more than one make. Thus even thermometers are not free from the defects that are inherent in a system where the art of feeling the pulse plays so important a part. These defects do not however materially affect the methods of treatment. In spite of this fact, we neither deny the utility of the thermometer nor object to the use thereof. But the point we wish to emphasize is that, if at present we do not have such instruments to rely on, the same was the case with the allopaths in by-gone days and that, if the modern medical school has realized its need, we too are ready to adopt it.

Similar remarks apply to the use of stethoscope. Just as the allopath have not hesitated to incorporate the best features of other systems in their own, we too should be allowed to embody in ours the corresponding features of other systems. In spite of such occasional adaptations the use of indigenous medicines will be found to be the main characteristic that distinguishes the Eastern from the Western system.

Our methods of diagnosis are based on the examination of—

(1) Pulse : We have continual recourse to this method of diagnosis, for the heart is affected in many diseases leaving its condition to be determined by the pulse which has direct connexion with it. In this respect both the systems agree.

(2) Urine : As in the allopathic system, the examination of urine in our system helps us to diagnose the state of the kidneys, liver, digestive organs and blood. But we have our own terms to designate the various phenomena disclosed by such examination.

(3) Faeces : Like the allopaths we examine the form, colour, consistency and odour of the faeces with a view to trace the causes of certain diseases.

(4) Internal organs : By palpation and percussion, by their causing pain and enlargement we diagnose the diseases of the liver, spleen, stomach, intestines, heart and lungs as is being done by the allopaths.

(5) Description of disease : Our medical books give a complete account of every disease such as is to be found in the treatises of the other system. In them we find mention made of the differential and pathognomonic symptoms which form the basis of our diagnosis.

(6) Tongue : We examine the tongue to see whether it is coated or not, such examination enabling us to learn the condition of the blood and digestive organs.

(7) Lips, teeth, throat and tonsils are also examined with a view to the diagnosis of diseases.

(8) Saliva : We base our diagnosis on the quantity and quality of saliva, its taste and consistency. The changes in taste also serve as an index.

(9) Hunger and thirst : These desires also help the diagnosis of diseases by their moderation or otherwise.

(10) Respiration : The frequency and odour of the breath is also a determining factor in our system.

(11) Vomit : The nature of the vomit likewise becomes a guide in the diagnosis of diseases.

(12) General condition : We also take into account the condition of the hair, the colour of the body and its organs, the leanness or otherwise of the constitution, the excretions of the body other than urine and faeces such as tears, pus, perspiration, etc., the amount of sleep enjoyed, the mental state of the patient, his physiognomy, his dreams and the pains felt in the different regions.

It is now pertinent to ask which of these methods are unscientific. As to the question whether or not our diagnosis is correct, we had better rely on the practical results of our treatment rather than waste time over arguments based on the ignorance of the Eastern systems. The very fact that these systems enjoy extensive public patronage in spite of the lack of Government support is indicative of their inherent virtues. At present there exists no provision whatever for a systematic study of the oriental systems and the free distribution to the masses of the medicines prescribed by them ; yet the systems survive on account of their potent efficacy. Had the case been otherwise, no nation would blindly submit itself for centuries together to what are regarded as coarse methods of treatment at the risk of precious lives.

METHODS OF TREATMENT.

Before dealing with the methods of treatment of the unani system, I should like to make a few observations on those employed by the allopathic system. Empirical treatment and rational treatment form at present the two main divisions of the allopathic system. If, in spite of the much vaunted scientific advance, empirical methods are not wholly absent from the allopathic system, is it justifiable to call the other systems unscientific merely on the ground that the latter rely more largely on empirical treatment ? It is a principle recognized by the allopathic system that what is deemed empirical to-day may prove rational to-morrow. Let us then continue the use of indigenous medicines to which centuries of experience have accustomed us. To the allopaths these methods may seem empirical but like them we may be able to prove their rationale if we are afforded necessary facilities. For example, the use of mercury in cases of syphilis was considered to be empirical by the allopaths who none the less were benefited by it until its rational basis was established by research. Given therefore favourable conditions, it is more than possible that we too will be able to find a rational basis of our remedies.

Proceeding further, in the unani system are to be found three methods of treatment—(1) medical, i.e., *Ilaj-ba-dawa*—(2) dietic and climatic, i.e., *Ilaj-ba-giza vo-hawa*—(3) hygienic, i.e., *Ilaj-ba-tadbeer.* To the above may be added the palliative treatment, i.e., *Ilaj-bith-thakfeef.* It is presumed that the Western system also recognise some such classification. The allopathic treatment as distinguished from the homeopathic treatment aims at producing such conditions in the body as are antagonistic to the disease with which it is affected and thereby effect a cure. If this is deemed to be a scientific principle and the same principle is observed by the unani system, what justification is there for declaring the latter to be unscientific ?

MODES OF ADMINISTERING DRUGS.

(1) The bulk of our medicines are administered through the mouth to admit of their being absorbed by the mucous membrance of the stomach or intestines. Under this category fall aqua (araq), syrup (sharbath), oxymel (sikinjabeen), powder (sufoof), pill (hab), decoction (joshanda), infusion (keesanda), tablet (kurs), confection (majoon), oil (roghan), mucilage (luab), extract (rub), linctus (layook), conserves (murabha), oxide (kushtha), kameera (a kind of confection).

(2) We make use of gargles, tooth-powders, lozenges, sprays and callutoires in the affections of the mouth, teeth and throat.

(3) We press the Enema into our service whenever necessary.

(4) We have recourse to snuffs, inhalation and insuffalations in diseases of the nose, larynx and lungs.

(5) We employ oils, ointments, pastes, paints and fomentations for external application.

(6) We bring into use the syringe, bougies and collyria in the diseases of the nose, bladder, urethra, vagina and eyes.

(7) Besides the above we avail ourselves of emetics, diuretics, diaphoretics, purgatives, emmenagogues and blood-letting by means of lancet and leeches whenever necessary. It must be observed that blood-letting is not now much in vogue.

The above facts point to the close similarity that exists between the two systems in the matter of administering medicines. It may be remarked however that injection of medicine are not in vogue in the unani system. If this method is universally recognised to be free from defects, we too shall adopt it. At present there are a host of eminent Western doctors who are against the injection of medicines.

REASONS WHY OUR INDIGENOUS MEDICINES ARE EFFICACIOUS.

(1) Our medicines are prepared mainly from the products of the country in which we are born and bred and no wonder that they admirably suit the Indian temperament.

(2) The drugs and compounds we use are based on the experience of centuries and this is why much reliance is placed on them. All these have been experimented upon the people living in the Tropics while the medicines imported from Europe have been tested on the men residing in cold regions. To quote an illustration, the maximum dose of quinine mentioned in the allopathic materia medica cannot be taken by an Indian patient without producing untoward symptoms although it may suit a resident of Europe. Both observation and science prove that in cold countries the animals are endowed with a strong body and thick skin covered with hair or wool as a protection against the rigours of cold. The lesson to be derived from this phenomenon is this. Diseases which are congenial to a particular soil are offset with cures out of the same soil. I have heard of a herb in Simla or Kashmir which on touch produces pain similar to that produced by the sting of a scorpion but nature has provided an antidote for this in another herb which grows around he one which causes pain.

(3) We largely avoid using poisonous drugs. In cases in which this cannot be helped the drugs are purified with a view to lessen their potency so far as the poisonous effects are concerned. The allopathic system on the other hand has recourse to poisonous drugs in a greater degree especially in the form of tinctures and alkaloids thereby intensifying their potency in relation to poisonous effects. For example, we use nux vomica after soaking it in water for a long time, imbedding it in flour and boiling it in milk in succession whereas the allopaths extract out of it strong poison, viz., the alkaloid strychnine and use it. The result is that although the allopathic system takes credit for the instantaneous effects of its drugs, it is not free from the risks attendant in the use of medicines of powerful potency. Our medicines, on the other hand, though slow to operate are certain in their effects. What is more they are entirely free from dangerous after-effects. It is just possible that the diagnosis happening to be wrong, the use of powerful medicines may lead to fatal results. Much as we value the need for instant relief in the case of a patient, we prefer to cure his ills step by step and thereby avoid the risk of endangering his precious life. This is the principle underlying the use of poisonous drugs in a purified form. In the course of a casual discussion with regard to the merits of the unani system, a doctor-friend once said to me "Brother, to be candid, it is very difficult for a patient to recover who has been mishandled by us." As I understand the statement, once the poisonous effects of medicines come to stay in the system, it is very difficult to eradicate them.

(4) The efficacy of our treatment can otherwise be demonstrated by observation and experiment. Let the Government spend as much money on the Indian systems as they do on the allopathic system; let them provide colleges for turning out efficient and capable men of the one system as of the other; it will then be time to prove by statistics how many have been benefited by the Indian systems and how many by the allopathic system by reason of the patronage extended to each.

To conclude, the real cause of the retrogression of the Indian systems is to be found in the callous indifference of the State towards them. In the circumstances our systems do not deserve to be called crude or unscientific. If the State desires that the systems should make real progress let it ensure this by granting facilities, not by creating difficulties. Let the State make provision for enabling us to open colleges and to found hospitals for systematic study. Let our status be improved to enable us to bring research to bear on our theories and to make such additions and improvements thereto as may be found necessary. Failing this, the State must take early steps to extricate from the clutches of the so-called unscientific Indian systems millions of those who at present do homage to them. In the circumstances the inanition of the State cannot but be deemed inexplicable.

I can affirm with certainty that many a time have the indigenous systems of treatment resulted in miraculous cures when the allopathic system has ended in failure. This is a matter which has come within the cognizance of both doctors and hakeems. The reasons are the same as those mentioned above.

APPENDIX II.

QUESTIONNAIRE TO WITNESSES.

A Preliminary Note.

On the 21st February 1921, the Madras Legislative Council passed a resolution, recommending to the Government to take early steps to encourage the indigenous systems of medicine. Under G.O. No. 1351, P.H., Press, dated 17th October 1921, the Government have appointed a committee to report on the question of the recognition and encouragement of indigenous systems of medicine in vogue in this Presidency. The committee so appointed desire to have the views of all persons interested in this question, and are sending round the following questionnaire to various individuals and associations, both within and without the Presidency of Madras. As under the terms of their reference, the committee are required to subject the evidence gathered to scientific criticism, witnesses are requested to support their arguments, wherever necessary or desirable, by proofs or testimony acceptable to modern science, such, for example, as the evidence of directly demonstrable or observable facts, or of facts indirectly inferable, by logical methods of the nature of Induction and Deduction, known to modern science, or by showing that a proposition has the hypothetical certainty of a coherent system of assumptions or the practical or pragmatic certainty of a hypothesis that works best. Witnesses are also requested to note that the authority of Revelations or venerated texts or uncriticisable tradition, however high its evidential value may be in other matters, are not accepted by modern science as valid testimony unless it is also capable of being proved by one or other of the methods already indicated. If there are any persons or associations who may wish to favour the committee with their views but are not in receipt of the questionnaire, they are requested to apply, for copies of questionnaire, to the Secretary to the Committee on the Indigenous Systems of Medicine, Post Box 262, Madras. After perusal of the replies of witnesses, a certain number of them will be requested, where necessary, to appear before the Committee for oral examination. It is earnestly requested that replies to the questionnaire may be sent in as early as possible (not exceeding a month from the date of receipt of the questionnaire) in order that the Committee may be able to report on the question without any avoidable delay. If witnesses desire to state their views on any point relevant to the present inquiry, which is not covered by the following questionnaire, it is requested that the Committee may be favoured with such views in a supplementary note.

Replies and all communications are to be addressed to

The Secretary to the Committee on the
Indigenous Systems of Medicine,
Post Box 262,
Madras.

Questions to Witnesses.

1. What is the division or divisions of the indigenous systems of medicine—Ayurveda, Unani or Siddha that you propose to deal with ?

2. (*a*) What are the theory or theories of causation of disease according to your system ?

Please favour the Committee with your views as to how far your theory or theories stand the tests of modern scientific criticism ?

(*b*) What are the principles and methods of diagnosis and treatment followed in your system ?

Please favour the Committee with your views as to the general efficacy of treatment adopted in your system, supporting your statements by facts and figures wherever possible.

(*c*) Do you hold the view that indigenous systems of treatment are more efficacious in certain conditions than other systems ? If you do, please adduce evidence in support of your statement.

3. (*a*) Are you connected directly with any institution, providing medical relief or medical education, on indigenous lines ?

(*b*) Do you consider that the existing institutions of indigenous systems are satisfactory from the standpoint of

(1) adequacy of medical relief provided ; and
(2) suitability as centres of medical education.

If your answer is in the negative, please state in what respects you consider the existing arrangements deficient and how you propose to remedy them.

(*c*) Do you consider that there exists at present sufficient provision for medical relief and medical education on indigenous lines ? If your answer is in the negative, please state what measures you would propose to remedy the insufficiency ?

4. Do you consider that the ideal medical training of indigenous systems of medicine requires

(1) that the students should be placed under the personal guidance of teachers of first-rate ability and of recognized standing in their subjects ;

(2) that the teachers and students alike should have access to well-appointed hospitals, laboratories, libraries and museums ;

(3) that the teachers should have sufficient leisure to be able to pursue independent investigations in their own subjects ?

If you share this view as to the essentials of medical training, do you consider that this ideal is attained or attainable in the near future in any institution in this Presidency or elsewhere, where there is provision for medical training on indigenous lines?

If you consider that this ideal is too high for the present, what would you substitute in its stead, as the idea to be worked out in the immediate present ?

5. Do you agree with the view of the Calcutta University Commission that

"There is an obvious and promising desire at the present moment among the numerous adherents of these (indigenous) systems for closer touch with modern scientific methods. In time, no doubt, they will be able to make available for the practitioners of western medicine the traditional knowledge which is of real value and will reject, as western medicine continually rejects, those theories which are mere survivals, and cannot stand the test of experiments. The distinction between Indian and western 'systems' of medicine will then disappear."

If you agree that a unified system of medicine as indicated in the above passage is the ideal to be aimed at, what steps would you suggest for the fulfilment of such an ideal ?

6. Do you agree with the view that the curriculum of studies of indigenous medicine should include a study of modern scientific methods as illustrated by such subjects of study as modern physics, chemistry and biology, as also a study on modern lines of anatomy, physiology, pathology, bacteriology, and surgery in all its branches ?

If you agree with the above view, in whole or in part, please favour the Committee with a prêcis of the course of studies you would propose, for students of indigenous medicine, with special reference to

(*a*) the progressive standards you would propose, that is to say, standards corresponding, for example, to the existing allopathic qualifications of licentiate (L.M.P. of our allopathic medical schools), graduate, masterate and doctorate (L.M.S., M.B., M.S., M.D., of our Universities).

(*b*) The preliminary qualification and periods of study for each of the standards proposed.

(*c*) The medium or media of instruction proposed.

7. What are your views on the question of extending medical registration to indigenous systems of medicine ? If you hold that such extension is necessary or desirable, please favour the Committee with your views regarding

(*a*) the formation of a suitable Registration Board for admitting competent practitioners into the medical register,

(*b*) any changes in, or additions to, the existing legislation on medical registration.

8. What is your opinion regarding the comparative cost of treatment, according to allopathic and indigenous systems ? Please give reasons for your opinion.

9. What, in your opinion, are the causes of decay of the indigenous systems of medicine ? Kindly favour the Committee with your suggestions for revival ?

10. Please state your views as to how the indigenous systems of medicine can be fostered and promoted by

(*a*) the State,
(*b*) the local boards,
(*c*) the Universities,
(*d*) private agencies (individuals or associations).

APPENDIX III.

LIST SHOWING THE NAMES OF PERSONS FROM WHOM WRITTEN EVIDENCES WERE RECEIVED, ARRANGED LANGUAGE-WAR.

English.

1. Mr. K. Velan, Arkonam.
2. ,, B. L. Sarnelis Silva, Colombo.
3. ,, Vaidya Appa Sastri Sathe, Bombay.
4. ,, C. S. Narayanaswami Ayyar, Shiyali.
5. ,, K. S. Narog, Ollur, Cochin State.
6. ,, V. Narayanan Nayar, Vatavanore, Kollengode, Malabar.

List showing the names of persons from whom written evidences were received, arranged language-war —*cont.*

English—cont.

7. Mr. J. N. Ramanathan, Madura.
8. ,, Ramakrishnayya, Mangalore.
9. Pandit T. R. Ethirajulu Nayudu, Madras.
10. Mr. A. Z. Muhammad Latiefuddin Sahib, Trichinopoly Fort.
11. His Highness Sir Rama Varma, G.C.S.I., G.C.I.E., Cochin.
12. Mr. L. P. Fernandez, Kodialbail P.O., South Kanara.
13. Dr. Prasadi Lal Jha, Cawnpore (United Provinces).
14. His Highness Rama Varma, the 7th Prince of Cochin, Trichur.
15. Mr. T. Govindan Nayar, Chowghat.
16. Ayurvedacharya Kaviraj Jnanendra Nath Sen, Calcutta.
17. Pandit T. Venkata Siva Sarma, Kovur, Nellore district.
18. Pandit Narayana Ayyangar, Madura.
19. Baidyaratna Pandit Maguni Misra Brahma Raj Kaviraj, Puri.
20. Vaidya Pandit Hari Prapana Sharma and 16 others, Bombay.
21. His Highness Kerala Varma, the 1st Prince of Cochin.
22. Mr. A. Krishna Nayar, Trichur.
23. ,, Vayaskara Mooss, Kottayam, South India.
24. Dr. V. G. Desai, Bombay.
25. Mr. Ravishankar Ganesh Anjaria, Mangrol-State, Kathiawar.
26. ,, Triambak Sastri Vaidya, Benares city.
27. Kaviraj Sri Kamakshi Prasad Sarma, Berhampur.
28. Mr. Haran Chandra Chakravarthy Kaviraj, Gharmara P.O., Rajshahi, Bengal.
29. ,, T. G. Bande, Yeotmal.
30. ,, K. Sesha Ayyar, Basavangudi P.O., Bangalore.
31. Dr. M. G. Deshmukh, Bombay.
32. Mr. P. S. Varier, Kottakal, Malabar.
33. ,, K. C. Subrahmanya Pillai, Pollachi.
34. ,, C. V. Subrahmanya Sastri, Tirupati.
35. ,, Hakim Jagan Nath, Hadiabad.
36. ,, Hariranjan Majunder, Delhi.
37. ,, Mela Ram, Lahore.
38. The Joint Secretaries of South India Ayurvedic Sangam, Madras.
39. Mr. Sankara Menon, Trivandrum.
40. The Eastern Medical Association, Triplicane, Madras.
41. The Secretary, D.A.U.V. Sangam, Trichinopoly.
42. Rao Bahadur A. Krishnaswami Ayyar, Mylapore.
43. Mr. Kaviraj Sriman Baishnavo Tripathi, Berhampur.
44. ,, S. Narayanaswami Ayyar, Madras.
45. ,, M. M. Hafez-ul-lah Sahib, Krishnagiri.
46. Dr. Jamini Bushan Roy, Kaviratna, Calcutta.
47. ,, Mahamahopadhyaya Kaviraj Gananath Sen, Calcutta.
48. Pandit S. S. Anandam Pillai, Madras.
49. The representatives of "The Madras Maruthuvakula Sangam," Madras.

Tamil.

1. Mr. D. Nataraja Sarma, Trichinopoly.
2. ,, S. M. Natchimuthuswami Pillai, Vedasandur, Madura district.
3. ,, A. S. Chokkalinga Chettiyar, Kumbakonam.
4. ,, B. A. Krishnaswami Sastri, Madura.
5. ,, T. Ramaswami Chettiyar, Kulittalai.
6. ,, S. G. Lurthaswami Pillai, Trichinopoly.
7. ,, Vaidyapathi S. Palvannam Mudaliyar, Tinnevelly town.
8. ,, S. Velayudam Pillai, Kumbakōnam.
9. ,, Abdul Rahiman Sahib, Trichinopoly Fort.
10. ,, S. K. Subbayya Pillai, Aravakurichi, Karur.
11. ,, M. V. S. Krishna Ayyangar, Kumbakōnam.
12. ,, V. Ponnuswami Pillai, Kumbakōnam.
13. ,, P. G. Ganapathi Sastri, Srirangam.
14. ,, T. R. Raja Rao, Srirangam.
15. ,, M. Bashyam Ayyar, Trichinopoly.
16. ,, G. Ramanatha Sastri, Kavyur P.O., Coimbatore district.
17. ,, N. M. S. Shunmugasundara Nayanar, Madras.
18. ,, S. R. V. Das, Salai—Vellore, Vellore.
19. ,, V. Subrahmanyam, Teppakulam, Trichinopoly.
20. ,, K. Raju Pillai, Kattapalli Post, Kattalai.
21. ,, M. Singaram Pillai, Teppakulam P.O., Trichinopoly.
22. ,, T. M. Periyanna Pandit, Karur.

List showing the names of persons from whom written evidences were received, arranged language-war—*cont.*

Tamil—cont.

23. Pandit K. M. Dharmalingam, Karur.
24. Mr. Palaniyandi Pillai, Nallur, near Trichy.
25. ,, K. V. Kannayya Nayudu and Mr. K. S. Duraiswami Pandit, Kumbakōnam.
26. ,, S. Manikkam Pillai, Trichinopoly.
27. ,, V. S. Sesha Ayyar, Korapet, Tirumangalam taluk, Pudukottai State.
28. ,, R. Govindaswami Pandit, Srirangam.
29. ,, Shanmugasundaram, Kodambakkam, Saidapet, Madras.
30. ,, R. Somasundaram Pillai, Tanjore.
31. ,, Tiruman Subbayya Pandit, Pattamadai, Tinnevelly.
32. ,, S. A. K. Pillai, Mettupalayam.
33. ,, G. Sikamani Pandither, Tanjore.
34. ,, J. Seshayya Nayudu, Trichinopoly Fort.
35. ,, Vaidyapathi M. Ramaswami, Sholvanda Tirukarai, Madura.
36. ,, B. S. Kanthaswami, Kottar.
37. ,, Vaidyapathi P. Paramasivam, Srivilliputtur.
38. ,, A. Mankam Pillai, Tanjore.
39. ,, Amaboopathi Leon Veera Varma, Manapad.
40. ,, S. V. Kanniappa Pandit, Madras.
41. ,, Swami Virudai Sivagnanayogigal, Koilpatti.
42. ,, P. Thiruvengada Velar, Ramakrishnapuram.
43. ,, S. V. Vajapayalu and Mr. C. Appavu Pillai, Ettiyapuram.
44. ,, T. Chellam Ayyangar, Srivilliputtur.
45. ,, S. Shunmugam Pillai, do.
46. ,, Sakul Ahmed Ravuttar, do.
47. ,, Gopalakrishna Pillai, do.
48. ,, Sundaram Pillai, Palakarai.
49. ,, G. Subrahmanya Sarma, Madras.
50. ,, K. N. Ramaswami Pandit, Tinnevelly.
51. ,, Devasagayam Pillai, Madavakkam, Madras.
52. ,, V. Chakravarthi Pandithar, Madras.
53. ,, N. Viraraghavaperumal Pillai, Madras.
54. ,, Shanmugasundaram, Madras.
55. ,, R. M. K. Veluswami Pillai, Palni.
56. ,, K. Viraswami Nayudu, Ambajipeta, Gōdāvari.
57. ,, P. Rajamannar Nayudu, Madras.
58. ,, T. A. Govindaswami Nayudu, Tiruvalundur, Mayavaram.
59. ,, Natesa Pillai, Tiruvalur.
60. ,, Ponnuvelu Pillai, Tiruvorriyur.
61. ,, S. K. Chokkalingam Pillai, Trichinopoly Fort.
62. ,, Periyaswami Konar, Trichinopoly.
63. ,, M. Kumaraswami, Madras.
64. ,, V. K. Krishnaswami Pillai, Madras.
65. ,, R. Padbanabha Mudaliyar, Nagarkoil.
66. ,, N. Kedurama Pillai, Madras.
67. ,, V. Somasundaram Pillai, Trichy.
68. ,, Raja Gramani, Villivakkam Post, Korattur village.
69. ,, P. Thanu Pillai, Kalvittangkulittam, Vadiseram.
70. ,, T. Sankara Thanu Pillai, Kottur, Nagarkoil.
71. ,, Vaidyapathi Manthiramurthi Ramaswami Ayyar, Sholavandan.
72. ,, E. Eswaramurthi Vaidyar, Kottur.
73. ,, V. Ramaswami Pillai, Narayanamangalam.
74. ,, C. Malayappaswami Pillai, Palni.
75. ,, T. R. Natesa Desigar, Chidambaram.
76. ,, T. P. Palaniyandi Pillai, Trichipuram.

Malayalam.

1. Mr. Vaidyar P. K. Ramunni Varier, Kottakkal.
2. ,, Vaidyar Elasseri Sankunni Varier, Kottakkal.
3. ,, K. Chekkootty, Post Chombala (via Mahe).
4. ,, P. K. Pachukutty, Eranhipalam, Calicut.
5. ,, Uluthara Warrier, Cochikoilakam, Trichur.
6. ,, Aryavaidyan M. I. Paniker, Calicut.
7. ,, M. K. Kunni Rama Kurup, Tiruvangad, Tellicherry.
8. ,, Vaidyan K. C. Krishna Varier, Kottakkal.
9. ,, P. N. Neelakantaswami Pattambi, Malabar.
10. ,, C. Narayanan Ghuthachan, Palghat.
11. The Secretary, Arya Vaidya Samajam, Kottakkal.
12. Mr. V. Shangu Warrier, Cheruthuruthi.

List showing the names of persons from whom written evidences were received, arranged language-war—*cont*.

Malayalam—cont.

13. Mr. M. K. Govinda Kurup, Madathumbhagam, Tellicherry.
14. ,, K. Govinda Nambiar, Tellicherry.
15. ,, E. G. Divakaran Mooss, Olur, Cochin State.
16. ,, K. Neelakantam, Calicut.
17. ,, P. C. Krishnan, West Hill.
18. ,, Arya Vaidyar M. Krishnan, Chalapuram, Calicut.
19. ,, M. Madhavan Nayar, Trichur.
20. ,, N. Subrahmanya Namboodri, Trichur.
21. ,, V. Komappa Nayar, Pudukad.
22. ,, C. Raghavan Nambiyar, Shoranur.
23. ,, P. Ramunni Menon, Chalapuram.
24. ,, P. M. Govinda Vaidyan, Trivandrum.

Kanarese.

1. Mr. Ramacharya (through the Muzrai Secretary, Government of Mysore, Mysore).
2. ,, Saiyid Hassan Moideen Shaw Sahib Bahadur do.
3. ,, K. Subba Rao do.
4. ,, M. S. Venkataramayya do.
5. ,, Venkata Sastri do.
6. ,, Hakim Valim Peeran Sahib Bahadur do.
7. ,, S. Kunnyya Lala do.
8. ,, Biligiri Ayyangar do.
9. ,, A. Pandit do.
10. ,, A. S. Pandit do.

Telugu.

1. Mr. K. Viraswami Nayudu, Ambajipeta.
2. ,, Tirumalaraju Surappa Nayudu, Tuni, Gōdāvari district.
3. ,, Tirumala Rangacharyalu, Bokkapatnam, Kistna district.

Oriya.

1. Mr. Kaviraj Sri Kamakshi Prasad Sarma, Berhampur.

Sanskrit.

1. Mr. P. Vasudevan, Trichur.
2. ,, Swami Lakshimiramaswami Acharya, Jaipur.
3. ,, Pandit M. Duraiswami Ayyangar, Madras.
4. ,, M. V. Shastri, Mangalore.
5. ,, K. Subramania Sastri, Madras.
6. The Ayurveda Mahamandal Committee, Madras.
7. Mr. Pandit T. Venkatasiva Sarma, Kovur.
8. ,, Pandit Shivaram Pande, Allahabad.
9. ,, Vaidya Narayana Shanker Dev Shanker (Ahmedabad Vaidya Sabha), Ahmedabad.
10. ,, Vidwan K. Sesha Sastri, Sringeri.
11. The President of the All-Indian Ayurvedic Mahamandal for 1922 (Mr. Krishna Sastri, Kavde).

Urdu.

1. Mr. Hakim Muhammad Ghouse Sahib, Madras.
2. ,, Hakim Abdul Asar, Trichinopoly.
3. ,, Hakim H. M. Khadir Mohi-ud-din, Delhi.
4. ,, Hakim Muhammad Ghouse (endorsed by Saiyid Abdul Aziz, Singarbagh, Trichinopoly).
5. ,, Srijut Thakur Dutt Sharma Vaidya, Lahore.
6. The Senior Hakim, State Unani Dispensary, Mysore.
7. Mr. Hakim Hari Govind, Ayurveda Kaviraj, Hyderabad.
8. ,, Hakim M. Kabir-ud-din Sahib Bahadur, Delhi.
9. ,, Pandit Behari Lal Jhingan, Lahore.

APPENDIX IV.

LIST SHOWING THE CONSTITUTION OF THE SEVERAL SUB-COMMITTEES.

Tamil.

1. M.R.Ry. Pandit K. G. Natesa Sastriyar Avargal.
2. ,, Pandit C. T. Arumugam Pillai Avargal.
3. ,, C. Maduramuthu Mudaliyar Avargal.
4. ,, C. S. Murugesa Mudaliyar Avargal.
5. Secretary.

List showing the Constitution of the several sub-committees—*cont.*

Telugu.

1. M.R.Ry. Dr. A. Lakshmipathi Garu, B.A., M.B.C.M.
2. ,, Mulugu Ramalingayya Garu.
3. Secretary.

Malayalam.

1. H. H. Rama Varma, the 9th Prince of Cochin.
2. M.R.Ry. Ayurvedacharya N. Madhava Menon Avargal.
3. Secretary.

Urdu.

1. Khan Bahadur Muhammad Usman Sahib Bahadur, B.A., M.L.C.
2. A. Muhammad Abdus Salam Sahib Bahadur.
3. Secretary.

Sanskrit.

1. M.R.Ry. K. G. Natesa Sastriyar Avargal.
2. ,, Pandit M. Duraiswami Ayyangar Avargal.
3. Secretary.

Kánarese and Oriya.

1. Secretary.

English.

1. Khan Bahadur Muhammad Usman Sahib Bahadur, B.A., M.L.C.
2. M.R.Ry. M. Subramaniya Ayyar Avargal, B.A., M.B.C.M.
3. A. T. Palmer, Esq., B.A., L.T., M.L.C.
4. Secretary.

APPENDIX V.

LIST SHOWING THE NAMES OF WITNESSES WHO WERE EXAMINED ORALLY.

1. M.R.Ry. P. S. Varier Avargal, Kottakal, Malabar.
2. ,, Pandit K. C. Subramania Pillai Avargal, Coimbatore.
3. ,, V. Narayanan Nayar Avargal, Vatavanore, Kollengode, Malabar.
4. ,, Ayurveda Bhushana Pandit C. V. Subramania Sastri, A.K.A.C., Tirupati.
5. Hakim Syed Abdulla Hussain Sahib Bahadur, Madras.
6. Hakim Moulvi Syed Sha Abu Muhammad Mahazarulla Sahib Madavi Bahadur, Madras.
7. Haji Hakim Saiyid Magdoom Ashruff Sahib Bahadur, Madras.
8. Hakim A. Muhammad Abdus Salam Sahib Bahadur, Madras.
9. M.R.Ry. A. Subbaraya Pandit, Mysore.
10. ,, Ayurveda Bhushana M. V. Sastri Avargal, Madras.
11. ,, Vaidyapathi G. Sigamani Pandit Avargal, Tanjore.
12. ,, Swami Virudhai Sivagnanayogigal Avargal, Koilpatti.
13. ,, Shanmuganandaswami Avargal, Washermenpet, Madras.
14. ,, K. S. Subramania Sastri Avargal, Madras.
15. ,, Ayurvedacharya N. Madhava Menon Avargal, Madras.
16. ,, K. Sesha Sastri Avargal, Sringeri.
17. ,, Pandit T. R. Ethirajulu Nayudu Avargal, Madras.
18. ,, C. Maduramuthu Mudaliyar Avargal, Madras.
19. ,, Pandit C. T. Muthayya Pillai Avargal, Madras.
20. ,, C. S. Murugesa Mudaliyar Avargal, Madras.
21. ,, V. Shanmugasundara Mudaliyar Avargal, Madras.
22. ,, S. S. Anandam Avargal, Madras.
23. ,, Vaidya Ratna R. Bharata Sastri Avargal, Madras.
24. ,, Vaidya Bhupathi S. Krishna Rao Avargal, Madras.
25. Hakim A. Z. Muhammad Latifuddin Sahib Bahadur, Trichinopoly.
26. M.R.Ry. Pandit Narayana Ayyangar Avargal, Madura.
27. ,, K. A. Venkatachala Sastriyar Avargal, Madras.
28. ,, G. Subramanya Sarma, Eliyurkar Vaidyathirtha, Madras.
29. ,, C. S. Narayanaswami Ayyar Avargal, Shiyali.
30. ,, V. Ponnuswami Pillai Avargal, Kumbakonam.
31. ,, R. M. K. Veluswami Pillai Avargal, Koilpatti.
32. ,, N. Veeraraghavaperumal Pillai, Koilpatti.
33. ,, K. Sesha Ayyar Avargal, Bangalore.
34. ,, Rao Bahadur A. Krishnaswami Ayyar Avargal, Madras.

List showing the names of witnesses who were examined orally—*cont.*

35. M.R.Ry. S. R. V. Dass, Vellore.
36. ,, Devasagayam Pillai Avargal, Maduvakkam, Madras.
37. ,, Chakravarthy Pandithar Avargal.
38. ,, Pandit M. Duraiswami Ayyangar Avargal, Madras.
39. ,, Kaviraj Kamakshi Prasad Sarma, Berhampur.
40. ,, Kaviraj Sriman Boishnavo Tripathi Sarma, Berhampur.

APPENDIX VI.

List showing the details of the touring Sub-Committee's programme.

Places visited.	Names of prominent persons interviewed.	Important institutions inspected.
	Bengal.	
1. Calcutta ..	1. Dr. Mahamahopadhya Kaviraj Gananatha Sen, M.A., L.M.S.	1. Asthanga Ayurvedic College.
Do. ..	2. ,, Kaviraj Jamini Bushan Roy Kaviratna, M.A., M.B. & C.M., F.C.U.	2. National Ayurvedic College.
Do. ..	3 Sjt. Vaidyaratna Kaviraj Jogendranath Sen Vaidya Bushan, M.A.	3. Marwari Hindu Hospital.
Do. ..	4. ,, Kaviraj Shyamadas Vachaspati ..	4. Digamber Mitter's Charitable Dispensary.
Do. ..	5. ,, Kaviraj Hamachandra Sen	5. Bishuddhananda Marvari Hospital.
Do. ..	6. ,, Kaviraj Gnanendra Nath Sen, B.A., Kaviratna.	6. The late Kaviraj N. N. Sen's Ayurvedic Pharmacy.
Do. ..	7. ,, Kaviraj Munindra Narayan Sen, Professor, Asthanga Ayurvedic College.	7. B. K. Sen & Co. Ayurvedic Works.
Do. ..	8. ,, Kaviraj Satwa Charan Sen Gupta, Professor, Asthanga Ayurvedic College.	....
Do. ..	9. ,, Kaviraj Sarat Chandra Vyakarna Thirtha, Professor, Asthanga Ayurvedic College.	....
Do. ..	10. Dr. Rao Bahadar J. N. Mitra, L.M.S., Civil Surgeon (Teacher of Medicine).	....
Do. ..	11. Sjt. Kaviraj Janaki Lal	....
Do. ..	12. ,, ,, Rajendra Narayan	....
Do. ..	13. ,, ,, Sital Chandra	....
Do. ..	14. ,, ,, Kedarnath	....
Do. ..	15. ,, ,, Madhav Chandra Tarka Thirtha.	....
Do. ..	16. ,, ,, Harinatha Vidyaratna	....
Do. ..	17. ,, ,, Haran Chandra Visharada ..	....
Do. ..	18. ,, ,, Jamini Ranjan Sankhyathirtha.	....
Do. ..	19. ,, ,, Baneswar Kavyathirtha ..	....
Do. ..	20. ,, ,, Jagindranath Vyakaranathirtha (also Tarkathirtha-Darshanathirtha- Dharshanashastri).	....
Do. ..	21. Professor Satyendranath Sen, M.A., Vaidya Vagisa.	....
Do. ..	22. Sjt. Kaviraj Mahendra Lal Sen	....
Do. ..	23. ,, ,, Dwarakanath Sen Karyathirtha and Vyakaranathirtha and Tarkathirtha.	....
Do. ..	24. ,, ,, Kunja Lal Bhishagratna ..	....
Do. ..	25. Janab Khan Bahadur Shifa-ul-Mulk Hakim Abdul Rashid Sahib Bahadur.	....
Do. ..	26. Sjt. Kaviraj Prakaschandra Pradhan, B.A. ..	....
Do. ..	27. ,, ,, Amrita Las Das Gupta, Kavyathirtha and Kabibhusan.	....
Do. ..	28. Dr. Devendranath Mukerjee, L.M.S., Professor of Surgery, Asthanga Ayurvedic Vidyalaya.	....
Do. ..	29. Major R. N. Chopra, I.M.S., Secretary to the Bengal Committee, Ayurvedic System of Medicine.	....

List showing the details of the touring Sub-Committee's programme—*cont.*

Places visited.	Names of prominent persons interviewed.	Important institutions inspected.
	United Provinces.	
2. Benares ..	1. Sjt. Kaviraj Umacharan Bhattacharya, Professor, Ayurvedic Department, Benares Hindu University.	Benares Hindu University Ayurvedic department.
Do. ..	2. ,, Trimbak Shastri Vaidya	....
3. Allahabad ..	1. ,, Pandit Amaranath Sharma, B.A., LL.B.	It was proposed to visit the college, planned by the Ayurvedic Conference and to which the late Pandit Gopalacharlu made a munificient bequest; the college is however still in the making.
	2. Major Basu, I.M.S. (Retired)	....
4. Cawnpur ..	1. Dr. P. L. Jha, L.M.S., Ayurvedic and Allopathic Practitioner.	1. Digambar Jain Aushadhalaya, Cawnpur.
Do. ..	2. Dr. Ram Narayana Vaidya Shastri	2. Arya Samaj Ayurvedic Dispensary.
5. Lucknow ..	1. Janab Hakeem Abdul Hamid Sahib Bahadur, Secretary, Takmiluttib Institution.	1. Takmiluttib Unani Tibbi College.
Do. ..	2. ,, Hakeem Nasir Hussain Khan	2. Takmiluttib Unani Hospital. 3. King's Unani Hospital.
6. Haridwar ..	1. Sjt. Pandit Chandrasekhara Vaidya and his colleagues (3).	1. Rishikul Ayurvedic College and Hospital.
Do. ..	2. ,, W. D. Dixit, Esq., B.A.	2. Gurukal Ayurvedic College and Hospital.
Do. ..	3. ,, Pandit Viswambaranath Sharma, B.A., LL.B., Governor, Gurukal Committee, Kangri.	3. Gurukal Ashram, Kangri.
Do. ..	4. ,, Pandit Kesavanath Sharma	....
Do. ..	5. ,, Ramasaran Das, Principal, Gurukal Committee.	....
Do.	6. ,, Ayurveda Bhushana Dharma Datha, Professor of Ayurveda and Resident Physician, Gurukal.	....
	Delhi.	
7. Delhi	1. Janab Khan Bahadur Peerzada Muhammad Hussain Bahadur, M.A., Secretary, Ayurvedic and Unani Tibbi College Committee.	The Ayurvedic and Unani Tibbi College and Hospital, Delhi.
Do.	2. ,, Muhammad Sardar Bahadur ..	Hindustani Dawakhana, Delhi.
Do.	3. ,, Dr. Muhammad Habab-Ur-Rahman Sahib, L.M.S., Principal, Ayurvedic Unani Tibbi College and his colleagues (6).	....
	Punjab.	
8. Lahore	1. Sjt. Vaidyaraj Pandit Thakur Dutt Sharma Vaidya.	1. D. A. V. Ayurveda Vidyalaya, Lahore.
Do.	2. ,, Pandit Thakur Dutt Shastri	2. Unani Department of the Local Islamic College.
Do.	3. ,, Babu Bidar Nath Ghosh, M.SC., Kaviranjan, Principal, D. A. V. Ayurvedic College.	....

List showing the details of the touring Sub-Committee's programme—*cont.*

Places visited.	Names of prominent persons interviewed.	Important institutions inspected.
	Punjab—cont.	
8. Lahore—*cont.* ..	4. Sjt. Sarendra Mohan, B.SC., Vice-Principal and Professor.	3. Amritdhara works and Pharmacy.
Do. ..	5. ,, Pandit Diva Nath, Ayurvedic Visharada, Professor.	....
Do. ..	6. ,, Pandit Durga Dutt, Professor	....
	Ajmere-Merwara.	
9. Ajmere	1. Sjt. Pandit Rama Deva Sharma, Ayurveda Visharada.	1. Hindu Aushadhalaya.
Do.	2. ,, Pandit Rama Dayaluji	2. Ram Dayal Aushadhalaya.
Do.	3. ,, Vaidya Kalyan Singh	3. Jain Vaidyashala.
	Jaipur State.	
10. Jaipur	1. Sjt. Ayurveda Marthanda Pandit Swami Lakshmi Ramaswami Acharya, Principal, Ayurvedic Department of the State Sanskrit College, and his colleagues (3).	1. State Sanskrit College, Jaipur.
Do.	2. ,, N. K. Ray, Esq., Director of Public Instruction.	2. Shree Dhanwantari Aushadalaya.
	Bihar.	
11. Puri	1. Sjt. Vaidya Ratna Maguni Misra	Sanskrit College, Puri.
Do.	2. ,, Shamasundara Das Mahapatra, M.A. ..	....
	Bombay.	
12. Bombay ..	1. Dr. M. G. Deshmukh, M.D.	1. Prabhuram Ayurvedic College and hospital.
Do. ..	2. ,, Desai, M.B.	2. Shree Mumbayi Ayurveda Patasala.
Do. ..	3. ,, Pophat Prabhuram, L.M.S.	3. Zandu and Gajjar Pharmaceuticals.
Do. ..	4. Sjt. Pandit Hariprapannaji Acharya ..	....
Do. ..	5. ,, Yadavji Trikamji Acharya ..	....
Do. ..	6. ,, Vaidya Appa Shastri Sathe ..	....
Do. ..	7. ,, ,, Hanumant Prasad Joshi ..	....
Do. ..	8. ,, ,, Vasudevachari	....
Do. ..	9. ,, Bhishagvar V. B. Sukthankar ..	....
Do. ..	10. ,, ,, R. P. Vaidya ..	....
Do. ..	11. ,, Vaidya Shastri Jayaramji	....
Do. ..	12. ,, Vaidyaraj Triambaklal Neemi	....
13. Poona	1. ,, Vaidya Panchanana Krishna Shastri Kavde and his colleagues (6).	....
	Hyderabad State.	
14. Hyderabad (Deccan).	1. Sjt. Hakim Har Govind	1. State Unani Dispensary.
Do.	2. ,, Bhishagacharya Ayurveda Marthanda Pandit H. Subbaraya Shastri Kaviratna.	2. Institute of Ayurveda, Hyderabad.
Do.	3. ,, Pandit Vasista Ganapathi Shastri ..	....
Do.	4. ,, Pandit Sangameshwara Shastri	....
Do.	5. Nawab Naizamut Jung Bahadur	....
Do.	6. ,, Nazir Jung Bahadur	....

List showing the details of the touring Sub-Committee's programme—*cont.*

Places visited.	Names of prominent persons interviewed.	Important institutions inspected.
	Mysore State.	
15. Mysore	1. Sriman A. Subbaraya Pandit, Principal, Government Ayurvedic College and his colleagues (6).	1. State Ayurvedic Dispensary.
Do.	2. Sriman Amble Annaiha Pandit and his five colleagues of the State Ayurvedic and Unani Committee.	2. State Unani Dispensary.
16. Bangalore ..	1. T. E. Jayaram Ayyar, Esq., Head of the Ayurvedic and Unani departments of medicine, Mysore State.	1. Mysore Pharmaceuticals.
	Cochin State.	
17. Trichur	1. His Highness Sir Sree Rama Varma, G.C.S.I., G.C.I.E., Ex-Raja of Cochin.	1. Karaleeya Ayurveda Samaj Hospital, Cheruthiruthi, Shoranur.
Do.	2. M.R.Ry. Sri Rama Varma Avargal, the ninth Prince of Cochin.	....
Do.	3. ,, Sri Rama Varma Avargal, the tenth Prince of Cochin.	....
Do.	4. ,, Kuttacheri Akilamanna Aryan Moss Avargal.	....
Do.	5. ,, Thekkat Divakran Moss Avargal.	....
Do.	6. ,, Ikkandath Kunjan Warriar Avargal.	....
Do.	7. ,, Viloor Sanka Warriar Avargal ..	....
Do.	8. ,, P. Vasudevan Nampissan Avargal.	....
Do.	9. ,, M. Madhavan Nayar Avargal ..	....
Do.	10. ,, Thrikkovil Tizuthra Warriar Avargal.	....
18. Ernakulam ..	1. M.R.Ry. Diwan Bahadur T. Vijayaraghava Acharya, Diwan of Cochin.	....
Do. ..	2. His Highness the Maharaja of Cochin ..	....
	Travancore State.	
19. Trivandrum ..	1. M.R.Ry. Sankara Menon Avargal, M.A., L.T., Director of Ayurveda and Head of the State Ayurvedic College and hospital; and his colleagues of the Government Ayurvedic hospital and College.	1. Government Ayurvedic College.
Do. ..	....	2. Government Ayurvedic Hospital.
Do. ..	2. M.R.Ry. Diwan Bahadur T. Ragavayya Pantulu Garu, Diwan of Travancore.	3. Grant-in-aid Vaidyasalas, Trivandrum.
Do. ..	3. His Highness the Maharaja of Travancore ..	4. Government Ayurvedic Pharmacy and Botanical Garden, Trivandrum.

APPENDIX VII.

THE STATISTICS OF CERTAIN EXISTING INSTITUTIONS OF INDIAN MEDICINES.

1. Trivandrum—Government Ayurvedic Department.
2. Calcutta—Ashtanga Ayurvedic School Hospital.
3. ,, Marwari Hindu Hospital.
4. Lucknow—Takmil-ut-tib Institution.
5. Cawnpur—Digambar Jain Aushdhalaya.

The statistics of certain existing institutions of Indian medicines—*cont.*

6. Poona—City Municipality Ayurvedic Dispensaries.
7. Tirupati—Shree Venkateshwara Ayurvedic Dispensary.
8. Madras—Lee Chengalva Naicker's Ayurvedic Institute.
9. ,, S.K.P. Ayurvedic Dispensary.
10. ,, Ayurvedic College Dispensary.
11. ,, Venkataramana Ayurvedic Dispensary.
12. ,, South Indian Association Vaidya Sangam Dispensary.
13. ,, Shree Murugan Free Ayurvedic Dispensary.
14. ,, Calavala Cannan Chettiyar Ayurvedic Dispensary (Triplicane).

(1)

GOVERNMENT AYURVEDIC DEPARTMENT—TRAVANCORE.

The number of in-patients and out-patients treated in the Ayurveda Hospital and Dispensary and in the Ayurveda Pharmacy, Trivandrum, and also in the several grant-in-aid Vaidyasalas in the State during the year 1096 Malayalam Era (1920–21) :—

In-patients.					Out-patients.					Remarks.
Total treated during the year.	Cured.	Relieved.	Died.	Remaining under treatment when the year closed.	Total treated during the year.	Cured.	Relieved.	Died.	Remaining under treatment when the year closed.	
I. Ayurveda Hospital and Dispensary.										
115 ..	80·9 per cent	13 per cent	·09 per cent	5·2 per cent	29,151	82·4 per cent	12·8 per cent	0·2 per cent	4·6 per cent	The success rates for out-patients are approximate.
II. Ayurveda Pharmacy.										
..	..	..	..	..	16,651	84·8 per cent	10·6 per cent	0·3 per cent	4·3 per cent	
III. Grant-in-aid Vaidyasalas.										
..	..	..	..	..	170,641 (including 5,190 poison cases).	92·6 per cent	..	0·7 per cent	6·7 per cent	*This includes also those patients who were relieved or otherwise discharged.

Consolidated abstract of expenditure.

	1094.	1095.	1096.
	RS.	RS.	RS.
I. Direction—			
Salaries	2,528	3,043	3,141
Establishment	1,384	1,569	1,961
Allowances	701	444	468
Contingencies	414	624	379
Total ..	5,027	5,680	5,949
II. Ayurveda College—			
Salaries	..	..	597
Establishment	2,374	2,400	2,666
Supplies, services and contingencies ..	4,385	3,285	2,186
Total ..	6,759	5,685	5,449

The statistics of certain existing institutions of Indian medicines—*cont.*

Consolidated abstract of expenditure—cont.

	1094.	1095.	1096.
	RS.	RS.	RS.
III. Hospital and Dispensary—			
Establishment	1,034	1,604	1,668
Contingencies	2,270	9,180	11,145
Total ..	3,304	10,784	12,813
IV. Ayurveda Pharmacy—			
Establishment	354	458	609
Contingencies	6,478	1,596	1,462
Total ..	6,832	2,054	2,071
V. Ayurveda Botanical garden—			
Establishment	..	244	318
Supplies, services and contingencies ..	..	1,182	348
Total ..	..	1,426	666
VI. Grants to Ayurveda Medical Institutions—	13,355	14,096	14,092
Total expenditure ..	35,277	39,725	41,040

(2)

ASHTANGA AYURVEDA VIDYALAYA DISPENSARY, CALCUTTA.

A comparative statement showing the number of patients treated in the dispensary from the year 1918.

Year.	Period.	Department.	Number of new patients only.	Number of total patients.	Daily average.	Operation performed.	Remarks.
1918	First six months.	Medical	1,649	4,911	29·40	11	Extraction of tooth was counted as an operation.
		Surgical	112	455			
		Total ..		5,366			
	Second six months.	Medical	2,320	7,061	44·80	70	Do.
		Surgical	523	1,114			
		Total ..		8,175			
1919	First six moths ..	Medical	2,443	7,459	51·85	100	Do.
		Surgical	674	2,000			
		Total ..		9,459			
	Second six months.	Medical	3,179	9,179	66·40	57	Do.
		Surgical	948	2,777			
		Total ..		11,956			
1920	First six months ..	Medical	2,348	6,960	64·43	106	Do.
		Surgical	1,016	2,893			
		Total ..		9,853			
	Second six months.	Medical	3,153	8,962	65·92	103	Do.
		Surgical	1,035	3,140			
		Total ..		12,102			

The statistics of certain existing institutions of Indian medicines—*cont.*

Statement B—Showing the number of patients treated in the Ashtanga Ayurveda Vidyalaya and Charitable Dispensary during the half-year ending 31st December 1920.

Name of Department.	Number treated. (Total number of working days 184).							Average Daily attendance.					Total number of patients treated.
	Attended personally.	Represented by friends.			Children.					Children.			
			Male.	Female.	Male.	Female.	Total.	Male.	Female.	Male.	Female.	Total.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Medical	8,108	854	4,700	2,899	761	602	8,962	25·55	15·75	4·14	3·28	48·72	8,962
Surgical	2,935	205	1,793	693	406	248	3,140	9·73	3·75	2·20	1·35	17·20	3,140
Total ..	11,043	1,059	6,493	3,592	1,167	850	12,102	35·28	19·50	6·34	4·63	65·92	12,102

N.B.—All under 12 years of age are counted as children.

Statement F.—Number of patients according to class and sex treated in the Ashtanga Ayurveda Vidyalaya and Charitable Dispensary during the half-year ending 31st December 1920.

Department.	Hindus.				Muhammadans.				Christians.				Total.
	Adults.		Children.		Adults.		Children.		Adults.		Children.		
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
Medical ..	1,446	810	424	301	99	31	34	8	..	..	..	..	3,153
Surgical ..	517	205	144	85	36	21	19	8	..	..	..	..	1,035
Total ..	1,963	1,015	568	386	135	52	53	16	..	..	..	..	4,188

N.B.—All under 12 years of age are counted as children.

Statement G—Showing the surgical operations performed in the Ashtanga Ayurveda Vidyalaya and Charitable Dispensary during the half-year ending 31st December 1920.

Class of operations.	Nature of operations.	Number of operations performed during the half-year. Primary.	Secondary.	Total.	Remarks.
Operations on tumours	Lipoma removed and stitched ..	1	..	1	
Operations on abscess	Acute abscess incision	54	..	54	
Removal of foreign bodies ..	Removal of foreign bodies (excluding the external ear).	5	..	5	
Operations for arrest of hæmorrhage.	Application of styptics (*a*) chemicals.	..	..	..	..
Operations in the mouth ..	Infected wisdom tooth incision ..	5	..	5	
Operations on lymphatics ..	Removal of lymphatic glands ..	3	..	3	
Operations on the skin and subcutaneous tissue.	Boils, opened	10	..	10	
	Whitlow incised	8	..	8	
	Carbuncle ,, ... } Dectylitis ,, ... } Cellulitis ,, ... }	4	..	4	
	Sinus ,, ...	11	..	11	
Operations on generative organs.	Phimosis circumsised	1	..	1	
	Hydrocele tapped	1	..	1	
		103	..	103	One is major.

The statistics of certain existing institutions of Indian medicines—*cont.*

(3)

Marwari Hindu Hospital, Calcutta.

Table showing the number of patients treated in-door and out-door in the Ayurvedic section during the year 1920.

Names of diseases.	Out-door.	In-door.				Total number of patients treated both in-door and out-door.
		Total treated.	Cured.	Relieved.	Died.	
Fever	890	4	..	3	1	894
Diarrhœa	297	..	..	..	..	297
Dysentery	101	4	1	3	..	105
Indigestion	338	..	..	..	..	338
Piles	21	..	..	..	..	21
Worms	122	..	..	..	..	122
Jaundice	9	..	..	..	..	9
Hœmoptysis	29	..	..	..	..	29
Phthisis	6	..	..	..	..	6
Bronchitis	692	1	..	1	..	693
Asthma	32	..	..	..	..	32
Hysteria	1	..	..	..	..	1
Paralysis	273	2	..	2	..	275
Leprosy	74	..	..	..	..	74
Rheumatism	48	..	..	..	..	48
Ringworm	221	..	..	..	..	221
Scabies	783	..	..	..	..	783
Colic	137	..	..	..	..	137
Heart disease	7	..	..	..	..	7
Diabetes	15	..	..	..	..	15
Gonorrhœa	98	..	..	..	..	98
Disease of liver	7	..	..	..	..	7
Disease of spleen	21	1	..	1	..	22
Syphilis	36	..	..	..	..	36
Disease of mouth	102	..	..	..	..	102
Disease of nose	2	..	..	..	..	2
Disease of the ear	137	..	..	..	..	137
Disease of the brain	33	..	..	..	..	33
Female disease	34	..	..	..	..	34
Dropsy	59	7	4	3	..	66
All other diseases	724	3	2	1	..	727
Total ..	5,343	22	7	14	1	5,365

(4)

Takmil-Ut-Tib Institution, Lucknow.

Services rendered by the institute.

—	Educational.		Treatment of patients.			
	Number of students.	Number of successful students to whom certificates were issued.	Eye diseases including cataract.	Patients of surgical diseases.	Other diseases.	Total.
1902	..	..	76	29	..	105
1903	9	..	313	179	..	492
1904	47	6	261	209	..	470
1905	60	12	424	380	..	804
1906	59	10	763	798	1,770	3,331
1907	28	20	493	1,098	1,145	2,736
1908	69	8	1,088	837	1,664	3,589
1909	57	12	1,125	942	4,174	6,241
1910	80	7	2,101	2,321	4,957	9,379
1911	102	26	2,564	3,219	3,909	9,692
1912	76	23	3,316	3,947	6,315	13,578
1913	75	25	4,364	5,736	7,099	17,199
1914	97	14	4,709	6,873	9,998	21,580
1915	95	20	4,839	4,471	11,287	20,597
1916	78	27	4,543	4,175	11,594	20,312
1917	76	14	5,435	4,052	12,050	21,537
1918	73	10	6,835	5,905	15,147	27,887
1919	73	22	6,226	3,952	17,597	27,775
Total ..	1,154	256	49,475	54,723	108,706	207,286

The statistics of certain existing institutions of Indian medicines—*cont.*

(5)

An outline of twelve years' report of the Institute Digambar Jain Aushadhalaya, Cawnpore, from 1907 to 1919.

Year.	New patients.	Total number of patients.	Non-Jains.	Jains.	Pilgrims.	Remarks.
First ..	3,283	12,823	10,847	1,976	138	(1) The Aushadhalaya opens both in the morning and evening. In summer season from 7 a.m. to 10 a.m. and from 3 p.m. to 5 p.m. and in the winter from 8 a.m. to 11 a.m. and from 2 p.m. to 4 p.m.
Second ..	4,664	15,127	13,959	1,168	60	
Third ..	5,242	18,592	17,295	1,297	116	
Fourth ..	5,302	20,145	18,762	1,383	146	(2) To avoid inconvenience for the patients except in the case of serious illness requiring special attention, medicine is given for two days at one time.
Fifth ..	7,016	25,402	23,881	1,521	110	
Sixth ..	8,611	26,344	25,470	1,270	83	(3) These tables also include the number of patients suffering from cholera, plague, pneumonia, delirium, Typhoid and other serious diseases, and they are given in detail in the vernacular report of the Aushadhalaya.
Seventh ..	11,602	33,053	31,637	1,416	96	
Eighth ..	11,136	35,576	33,919	1,657	92	
Ninth ..	15,296	41,495	39,746	1,749	135	
Tenth ..	23,828	69,276	67,273	2,003	411	(4) From the month of July 1917 the Municipality has granted Rs. 50 per month to the Aushadhalaya.
Eleventh.	30,043	77,155	75,155	2,000	332	(5) Number during the Influenza epidemic.
Twelfth ..	32,071	72,818	71,477	1,341	373	(6) During the Influenza epidemic besides the medicines milk, parbal and munakka were also distributed.
Total ..	158,094	447,806	429,025	18,781	2,092	

(6)

Extracts from the Administration Report of the Poona City Municipality, 1918–19.

Ayurvedic Hospitals.

It will not be out of place here to make a special mention of the Temporary Ayurvedic hospitals started and conducted with conspicuous success during the terrible influenza epidemic of the year under report. While the whole city was writhing beneath the crushing weight of the malady an ayurvedic ward or rather hospital was opened in the buildings of the New Poona College kindly placed, by its Principal, at the dosposal of the municipality. Another ayurvedic hospital and a dispensary were also opened in Bhawani Peth by the kindness, public spirit and sacrifice of Messrs. Poman and S. A. Manurkar, a well-known Councillor of this Municipality. But it must be noted with pleasure that the idea of such a hospital was brought to the forefront and materialised by the efforts of the Poona Vaidya Mandal through its president, Mr. Vasudeo Shastri Shedanikar, and its energetic secretary, Mr. Krishna Shastri Kavade, who was assisted by zealous colleagues, Messrs. Appasaheb Gadre, Joshi, Apte, Date, Jadhav, and others. It has, however, to be admitted that the scheme would never have been carried out had not the late lamented Mr. H. N. Apte, the then President, given the scheme his whole-hearted approval. The starting of an ayurvedic hospital to meet a pandemic was in itself a bold experiment. For, as rightly observed by Mr. N. C. Kelkar, the President of the Municipality, in his address to Lord Willingdon, it was the ayurvedic system of treatment that was, so to say, on its trial. The trial was confidently accepted, nay, invited by the Mandal, and there is now no doubt that the best traditions of Ayurved have thereby been amply vindicated. The opening of ayurvedic hospitals was a novel and unique step. Nowhere in the whole of the Presidency was such an experiment tried or even contemplated at such a time of grave crisis; and the Poona Municipality was well advised in coming forward to support the beneficial experiment initiated by the Vaidya Mandal. As to the marvellous success of the ayurvedic treatment, Dr. Paterson of the Mission Hospital and Miss Henry, a nurse of the Willingdon War Hospital, have borne personal testimony. But more than their success in treatment, the ayurvedic hospitals carried out another great object. They inspired in the mind of the suffering people a confidence which nothing else could have created. This fact is prominently mentioned in his report by Prof. Kanitkar of the Furgusson College who said that the unwillingness of the stricken people to submit to the hospital treatment was insuperable. Nothing could induce them to go to a hospital; but when the ayurvedic hospitals were opened, they were exceedingly eager to avail themselves of that treatment. The Poona Vaidya Mandal came forward at a critical time, and without any remuneration voluntarily undertook at much personal cost and trouble to look after and treat the patients in the municipal hospital for which the Mandal and its Secretary deserve the special thanks of the Manicipality. Government also have kindly watched the methods of treatment at the Mandalis Ward, and the

The statistics of certain existing institutions of Indian medicines—*cont.*

Municipality would gladly note that Government have agreed to look at the support which the Municipality accorded to the ayurvedic system, in a liberal and sympathetic spirit. This fact goes a long way to prove not only that the expenditure of the Municipality on its ayurvedic dispensaries is necessary and justifiable, but that a permanent ayurvedic hospital supported by the municipality is a crying need.

Two English dispensaries (one in Nana's and the other in Narayan Peth) and one ayurvedic dispensary in Sadashiv Peth, were maintained by the Municipality for giving free medical relief to the poor, and the following figures will show the number of patients treated at these charitable dispensaries during the year under review :—

Places.	Number of patients treated.
Sadashiv (Ayurvedic)	51,951
Narayan (English)	46,562
Nana (,,)	38,638

It will be seen from these figures that the dispensaries are very much availed of by the public and their existence is thus justified. The medical officers of these dispensaries, together with their staff, have done valuable work during the last influenza epidemic, and this was duly acknowledged by the Municipality by paying them extra remuneration for their work.

(7)

EXTRACTS FROM THE ADMINISTRATION REPORT OF THE SHREE VENKATESWARA DISPENSARY, TIRUPATHI (1921–22).

The following statements shows the number of patients that attended the Dispensary during the year ending 30th June 1922 :—

Year.	Males.	Females.	Children.	Total.	Average per day.	Remarks.
1921–22 ..	22,582	11,817	2,017	36,416	100	16,076 New. 20,340 Old. Total 36,416

(*c*) The patients numbered in the above statement have been treated for various kinds of diseases and the most important of some of these are named below :—

Name of disease.	Number treated.
Malarial fever	1,256
Consumption	6
Paralysis and nervous diseases	205
Dropsy	164
Heart diseases	17
Asthama	133
Bronchitis	1,563
Rheumatic pains	315
Dyspepsia	2,714
Cholera	2
Other complaints	9,701
Total ..	16,076

Prompt and personal attention has been paid to all patients alike, and it is satisfactory to note that our treatment proved quite successful in almost all cases.

(*d*) The subjoined memorandum shows the amount spent on medicines during the year :—

	RS.	A.	P.
Cost of medicines	2,086	5	6
Contingencies including the amount paid for coolie, labour in preparing medicines	576	8	0
Total ..	2,662	13	6

The statistics of certain existing institutions of Indian Medicines—*cont.*

The average cost of medicines for one patient comes to about 11 pies.

(*e*) All medicines both, ordinary and valuable, in the shape of bhasmams, churnas, lehyas, aristas, asavas, arkas, vatties, panakas, chandrodayam, swarnavangam, rasayanam, etc., were prepared and they proved thoroughly useful and produced all beneficial results.

(*f*) Minor dressings and cleanings have been carefully attended to.

5. The staff of the institution (both Patasala and Dispensary) is enumerated below :—

(1) Ayurveda Bhushana M.R.Ry. C. V. Subrahmanya Sastri Garu, Pandit and Senior Physician in charge of the Institution.

(2) Raja Vaidya M.R.Ry. S. Appayya Garu, Ayurvedic Doctor in the dispensary. (He was long Physician in the Devasthanam service.)

(3) One compounder conversant with the allopathic system of compounding.

(4) One peon and two coolies for preparing medicines.

(5) *Extra Departmental service.*—M.R.Ry. R. V. Seshayya, M.A., Natural Science Assistant, D.H.H. School, Tirupati, is the Instructor in Physics, Chemistry, Physiology, Anatomy, Biology, Hygiene to the Ayurvedic students.

The total cost of the establishment during the year under report amounts to Rs. 840.

6. Proposals for the appointment of an additional Professor and a clerk for the ensuing year as also for obtaining better accommodation, have already formed the subject of a separate correspondence and have since been complied with.

(8)

P. T. Lee Chengalvaraya Naicker's Ayurvedic Institute, Vepery, Madras.

Statement showing the total number of patients treated among different classes and cost of medicine and maintenance during the year—1921–22.

Months.	Number of patients.				Total.	Average.	Cost of medicine.	Cost of maintenance.	Cost per head.
	Hindus.	Eurasians.	Christians.	Muham-madans.			RS. A. P.	RS. A. P.	
July	7,401	329	1,244	282	9,256	299	103 5 1	302 10 10	8·4 pies.
August	8,372	382	1,483	274	10,511	339	118 10 0	327 9 3	8·2 ,,
September	7,230	306	1,327	240	9,103	303	116 0 0	319 1 0	9·2 ,,
October	6,722	309	1,423	259	8,713	281	114 12 4	312 0 0	9·4 ,,
November	9,355	401	1,894	364	12,014	400	139 0 4	312 0 0	7·2 ,,
December	8,430	368	1,769	362	10,929	352	122 2 8	312 0 0	7·6 ,,
January	8,415	352	1,529	289	10,585	341	122 5 4	314 0 0	7·9* ,,
February	7,861	460	2,041	329	10,691	381	108 5 2	314 0 0	7·5 ,,
March	7,881	375	1,837	335	10,428	336	99 6 4	314 0 0	7·6 ,,
April	7,362	354	1,546	239	9,501	316	109 6 9	311 4 10	8·5 ,,
May	8,286	418	1,569	279	10,552	340	116 14 4	314 0 0	7·8 ,,
June	7,668	416	1,538	333	9,955	331	105 9 5	313 4 10	8·1 ,,
Total	94,983	4,470	19,200	3,585	122,238	335	1,375 13 9	3,765 14 9	8 pies.

* 502 patients on the 22nd.

The Superintendent of the Institute observes further thus :—" The number of patients treated in this dispensary during the year 1921–22, viz., 122,238, includes minor surgical cases such as opening of abscesses, carbuncles, scraping of malignant and chronic ulcers of various types, extraction of foreign bodies from ear, nose, etc., and such other minor things that can be done easily.

We are obliged to handle these cases not because we have the necessary equipment and leisure to do so but because of the importunity of the patients themselves who seem to believe that our ointments and applications cure them more speedily. Although we, in some cases, insist on the patients to go to allopathic hospitals for operation, they invariably go here again after operation for further treatment.

With my experience in the line I can confidently say that if more facilities are made available, we will not be less successful in surgicial cases also."

The statistics of certain existing institutions of Indian Medicines—*cont.*

(9)

SREE KANYAKA PARAMESWAREE DEVASTHANAM AYURVEDIC DISPENSARY, MADRAS.

Statement showing the diseases treated in the Sree Kanyaka Parameswaree Devasthanam Dispensary for the years 1920 and 1921.

Name of disease.	Grand total. 1920.	Grand total. 1921.
Dysentery	420	281
Malarial fever	5,665	6,815
Cold fever (Influenza)	2,692	2,370
Gonorrhœa	67	53
Debility and Anæmia	374	380
Rheumatic fever, Rheumatism	421	282
Syphilis (Primary and Secondary)	34	41
Tubercle of the lungs	89	102
Diabetes	29	35
All other general diseases	1,553	1,481
Diseases of the ear	2,930	2,955
Do. eye	339	414
Do. nose	21	22
Do. respiratory system	2,332	2,342
Dyspepsia	1,065	1,091
Diarrhœa	292	306
Diseases of the digestive system	4,309	4,185
Do. nervous do.	838	800
Do. urinary do.	48	61
Do. generative do.	119	106
Hydrocele	34	27
Other diseases of the skin	3,837	2,776
Ulcer	1,391	1,197
General diseases	241	315
Total	29,140	28,437

(10)

The Madras Ayurvedic College Dispensary.

Free dispensary and its progress.—The dispensary continued to do its ever-growing useful work during the year under report. It not only attracted patients from the different parts of the city but from the surrounding villages as well. The total number of patients treated during the year was 51,930 as against 13,326, 14,155 and 29,482, respectively, during the years 1915, 1916 and 1917. It may be stated that the dispensary is useful not only in relieving the sufferings of a large number of patients that resort to the same, but also serves as a means for the practical training and instruction of the College students.

The drugs and medicines used in the treatment of cases are based on the Sastraic formulæ and are so cheap that the treatment works out only at the rate of 6 pies per head. Judging from the successful results achieved, I venture to assert that the Ayurvedic treatment is best suited to our country and its climate, and the drugs and medicines prescribed by us are all indigenous and are always easily procurable.

The following statements show the number of patients treated with their ailments and also give the particulars of their religion and sex :—

Hindus.			Christians.			Muhammadans.			Total.			Old.	New.	Total.
Males.	Females.	Children.	Males.	Females.	Children.	Males.	Females.	Children.	Males.	Females.	Children.			
14,168	8,681	17,158	2,293	1,476	3,278	2,040	1,091	1,745	18,501	11,248	22,181	32,240	19,690	51,930

The statistics of certain existing institutions of Indian Medicines—*cont.*

(11)

VENKATRAMANA DISPENSARY, MYLAPORE, MADRAS.

Statement showing diseases treated in the Venkatramana Dispensary, Mylapore, during 1921–22.

Name of disease.	Number.	Name of disease.	Number.
Dysentery	898	Diarrhœa	110
Gonorrhœa	636	All other diseases of the liver	110
Kala-Azar	..	All other diseases of the digestive system.	1,395
Malaria	459	All other diseases of the urinary system.	99
Pyrexia of uncertain origin	2,161	Hydrocele	98
Rheumatic fever, rheumatism	43	Other diseases of the generative system.	61
Tubercle of the lungs	38	Diseases of the organs of locomotion.	47
Other tubercular diseases	..	Diseases of the connective tissue	62
All other infective diseases	42	Ulcers	2,693
Anæmia	459	Other diseases of the skin	863
Non-malignant new growth	200	All other local diseases	1,938
All other general diseases	7,654	Injuries (general and local)	2,336
Diseases of the nervous system	1,577	Other poisons	43
Diseases of the eye	644	Operations	49
Diseases of the ear	1,165	Total	28,432
Diseases of the nose	79		
Diseases of the circulatory system	258		
All other diseases of the respiratory system except pneumonia and tubercle of the lungs.	1,812		
Dyspepsia	403		

(12)

THE SOUTH INDIA AYURVEDA VAIDYASANGHAM, MADRAS, from 10th May 1922 to 21st January 1923.

Period		Hindus.	Christians.	Muhammadans.	Europeans.
10th May to 31st May 1922	232	232	..	..	..
Up to 30th June ,,	630	629	1	..	..
,, 31st July ,,	638	637	1	..	..
,, 31st August ,,	1,154	1,153	1	..	..
,, 30th September ,,	1,004	1,002	2	..	..
,, 31st October ,,	1,000	995	5	..	..
,, 30th November ,,	4,106	4,103	3	..	..
,, 31st December ,,	1,182	1,180	2	..	..
,, 21st January 1923	681	680	1	..	..
Total	10,627	10,611	16	..	..

Average daily attendance .. 41

	RS.	A.	P.
Total expenditure	359	0	0
Cost per head per day	0	0	6½

(13)

Statement of patients treated in SRI MURUGAN FREE AYURVEDIC DISPENSARY, CHOOLAI, MADRAS, from 9th July to 31st December 1922.

Month.	Total number treated in each month.	Caste. Hindus.	Muhammadans.	Europeans.	Christians.	Remarks.
1922.						
July	1,300	1,289	7	..	4	Out of this number, viz., 10,071, about 1,500 patients were treated for diseases of eyes other than full-matured cataract. The monthly average attendance is about 250. We have had also cases treated unsuccessfully both by the doctors of private practice and by the local hospital under the allopathic system. They have been treated successfully to the satisfaction of patients.
August	1,578	1,562	4	..	12	
September	1,900	1,880	..	..	20	
October	1,779	1,770	..	..	9	
November	1,721	1,717	1	..	3	
December	1,793	1,785	5	..	3	
Total	10,071	10,003	17	..	51	

The daily average attendance .. 57

	RS.	A.	P.
The total expenditure about	330	0	0
The average cost per head per day about	0	0	6

The statistics of certain existing institutions of Indian Medicines—*cont.*

(14)

Statement showing the total attendance of patients that were treated at the CALAVALA KANNAN CHETTIYAR FREE AYURVEDIC DISPENSARY, TRIPLICANE, and the average cost per patient for the period specified therein.

Period.	Patient according to sex.			Old or new.		Classified according to faiths.			Total.	Cost worked up to per patient.		Daily average.
	Males.	Females.	Children.	Old.	New.	Hindus.	Muham-madans.	Chris-tians.		For medicine.	Total main-tenance.	
										PIES.	PIES.	
1915 ..	6,977	6,023	5,546	11,304	7,242		..		18,546	4·76	8·5	244
1916 ..	52,444	56,749	32,741	91,405	50,549		..		141,954	..	..	388
1917 ..	60,518	65,271	50,812	107,802	68,799		..		176,601	..	..	483
1918 ..	57,602	58,580	50,376	92,976	73,582	76,007 Brahmans. 80,570 Non-Brahmans.	8,164	1,091 Panchamas. 726	166,558	..	9·6	456
1919 ..	57,993	55,312	47,161	84,061	76,405	153,848	6,171	447	160,466	..	9·9	440

REMARKS.—Dispensary opened on 17th October 1915 only.

Statement showing the kinds of diseases treated in the RAO BAHADUR CALAVALA KANNAN CHETTIYAR DISPENSARY, TRIPLICANE, for the period specified therein

Names of diseases.	The same in Sanskrit.	1915.	1916.	1917.	1918.	1919.
Fevers	Jwara	1,388	6,983	7,049	6,910	7,168
Typhoid	Sannipatha Jwara	3	22	3	2	4
Malarial	Vishama Jwara	574	3,561	4,723	5,921	2,050
Pneumonia	....	..	3	5	..	..
Diarrhœa and dysentery	Atisara and Pravahika	367	3,127	3,383	4,004	2,300 +1,685
Tuberculosis of bowels	Grahini	202	1,436	1,141	966	943
Piles	Arsas	90	527	644	590	603
Indigestion	Agirna	577	4,313	3,923	5,892	6,152
Cholera	Vishachika	2	3	6	9	6
Worms	Krimi	44	436	874	746	1,017
Anæmia	Pandu	77	529	797	228	396
Jaundice	Kamala	5	95	452	47	120
Hæmorrhage	Rakta Pitta	8	79	139	34	36
Phthisis	Rajayakshma	5	22	13	23	28
Cough	Kasa	1,202	6,350	4,485	6,772	6,671
Asthma	Swasa	270	1,392	897	507	619
Syncope	Moorcha	12	42	3	2	..
Insanity	Unmada	2	23	24	23	3
Epilepsy	Apasmara	12	112	98	10	8
Acute rheumatism	Amavata	243	1,866	2,2 7	1,172	1,201
Paralysis	Pakshavata	17	162	254	118	107
Paraplogia	....	366	2,884	3,774	..	..
Colic	Parinama and Anuadra Uasulas	478	3,624	2,068	716	1,000
Intestinal obstruction	Udavarta	3	121	250	53	67
Gastritis	Gulmam	86	282	221	16	19
Heart disease	Hridroga	74	753	199	82	65
Stricture of urethra	Moothrakrichra	23	576	141	329	255
Retention of urine	Muthraghata	13	10	16	8	4
Stone in the bladder	Asmari	..	4	9	3	4
Gonorrhœa	Sukra and Puyameha	2	260	161	127	105
Diabetes	Prameha and Mudhamaha	19	320	435	111	130
Ascites	Jalodharam	2	18	3	9	5
Enlargement of spleen	Plehodaram	23	148	118	82	64
Do. liver	Yakridudaram	43	198	254	43	67
Dropsy	Sepharaga	59	556	545	409	399
Hydrocele	Anda Vriddhi	24	338	247	128	118
Hernia	Anthravriddhi	..	2	2	..	..
Scrofula	....	..	3	4	..	..
Elephantiasis	Slipada	69	438	514	224	226
Abscess	Vidradhi	2	301	991	292	206
Ulcers	Vrana	128	738	2,259	898	1,074
Syphilis	Upadamsa and Sakadosha	63	338	344	243	194
Leprosy	Kushtaroga	24	138	96	51	70
Skin diseases	Twakroga	594	4,515	4,667	13,457	11,463
Smallpox	Masurika	..	2	..	..	..
Minor diseases	Kshadraroga	417	2,809	4,582	578	630
Diseases of mouth and teeth	Makharoga	193	1,748	1,989	2,221	2,282
Do. ear	Karnaroga	317	2,094	1,953	1,957	2,057
Do. nose	Nasaroga	13	167	224	91	87
Do. eye	Nethraroga	183	2,430	2,861	2,551	2,815
Do. head	Siroroga	378	3,604	2,414	2,708	2,678
Menorrhagia	Asrigdhora	28	268	282	123	515
Female diseases	Striroga	124	850	775	684	130
Children do.	Balaroga	12	42	25	41	24
Poisons	Sthavara Jangama Visham	15	80	158	42	38
Other diseases	Ithararoga	1,118	9,427	7,307	10,640	11,658
Nervous diseases	Vatharoga	..	..	..	1,568	1,572
Erysipelas	Visarpa	..	..	..	2	..
Hiccup	....	..	..	..	..	12
Ovarian tumour	....	..	..	..	..	34

APPENDIX VIII

SHOWING THE SCHEMES OF STUDY OF INDIAN MEDICINE APPROVED BY THE FOLLOWING AUTHORITATIVE BODIES FROM ALL OVER INDIA :—

1. All-India Ayurveda Vidyapeetha, Madras.
2. The Venkataramana Medical School, Madras.
3. The Ayurvedic College, Madras.
4. The South Indian Ayurveda Sangam, Madras.
5. The Eastern Medical Association (Unani), Madras.
6. The Government Ayurvedic School, Jaipur.
7. Prabhuram Ayurvedic College, Bombay.
8. Ashtanga Ayurveda Vidyalaya, Calcutta.
9. D.A.V. College, Lahore.
10. The Rishikul Ayurveda Maha Vidyalaya, Haridwar.
11. The Government Ayurvedic College, Mysore.
12. The Government Ayurvedic College, Trivandrum.
13. The National Medical College (Ayurvedic Section), Calcutta.
14. The Gurukal Ayurvedic College, Kangri.
15. Ayurveda Patasala, Bombay.
16. Ayurvedic and Unani Tibbi College, Delhi.

(1)

ALL-INDIA AYURVEDA VIDYAPEETHA.

I. Ayurvedacharya.

First paper	*Rasa Shastram* (Chemistry).
Second ,, ...	*Rogavignyanam* (Pathology, Symptomatology and Diagnosis).
Third ,, ...	*Kayachikitsa* (Medicine).
Fourth ,, ...	*Salyatantra* (Surgery).
Fifth ,, ...	*Prasutitantram* (Midwifery).
Sixth ,, ...	*Kaumarabhritya* (Diseases of Children).
Seventh ,, ...	*Manasa Roga* (Mental diseases).
Eighth ,, ...	*Vyavahara Ayurveda* (Medical Jurisprudence).
Ninth ,, ...	On Charaka Samhita (complete).
Tenth ,, ...	Sushruta (complete).
Eleventh ,, ...	Ashtanga Hridaya (complete).

II. Ayurveda Visharada.

First paper	Dravyaguna (Materia Medica and Therapeutics).
Second ,, ...	*Rasa Shastram* (Chemistry).
Third ,, ...	Sarira Shastram (Anatomy and Physiology).
Fourth ,, ...	*Swastha Vrittam* (Hygiene).
Fifth ,, ...	*Rogavignyanam* (Pathology, Symptomatology and Diagnosis).
Sixth ,, ...	*Kayachikitsa* (Medicine in all its branches).
Seventh ,, ...	*Salyatantra* (Surgery in all its branches).
Eighth ,, ...	*Agadatanta* (Toxicology).

III. Bhishag Examination.

Same as for the Ayurveda Visarada test, with the proviso that the candidates are allowed to answer the examination papers in their own vernaculars; the papers will however be set in Sanskrit only.

Candidates for the Visarada test must have completed four years of regular course under a guru and must be certified by him as being fully qualified to appear for the said examination.

Only those that have passed the Visarada or any equivalent test as specified under the Vidyapeetha rules are allowed to appear for the Acharya examination; further, they must also show that they have been practising for at least two years, before being allowed to appear for the Acharya test.

(2)

THE VENKATRAMANA MEDICAL SCHOOL—COURSE OF STUDY.

I. First-year Course or First Class.

1. Dhanwantari Nighantu.
2. Ashtanga Hridaya Sutrasthana.
3. Nadi Vijnana.

II. Second-year Course or Second Class.

1. Dhanwantari Nighantu.
2. Susruta Sarira and Pratyaksha Sarira.
3. Ashtangahridaya Kalpasthana

III. Third-year Course or Third Class.

1. Dhanwantari Nighantu.
2. Madhava Nidana.
3. Rasaratna Samuchchaya.

IV. Fourth-year Course or Fourth Class.

(i) Charaka Chikitsa and Practice.

Anatomy and Physiology are taught to the students throughout the course on modern lines.

(3)

MADRAS AYURVEDIC COLLEGE—COURSE OF STUDY.

Ayurveda Bhushana—Sanskrit Branch.

First year—

1. Paribhasha (Bheshajakalpa and Ayurveda Paribhasha).
2. Sutrashanam (Vagbhata).
3. Nighantu (Dhanvantari Nighantu, 1 to 3 chapters).
4. Rasatantra (Rasaratna Samuchchaya, 1 to 11 chapters).
5. Physics. } Elementary Course.
6. Chemistry. } Elementary Course.
7. Laboratory Work.

Second year—

1. Dravyaguna (Dhanvantari Nighantu, complete).
2. Sarira (Susruta, Vaghbata and Prathyaksha Sarira).
3. Nidana (Madhava, Vagbata and Nadivijnanam).
4. Anatomy. } Elementary Course.
5. Physiology. } Elementary Course.
6. Compounding and Practical Demonstration in Laboratory.

Third year—

1. Rasatantra (Rasaratna Samuchchaya, complete).
2. Chikitsa (Ashtangahridaya, Chikitsa and Kalpa).
3. Salyatantra (Susruta, Sutra).
4. Hygiene. } Elementary Course.
5. Materia Medica. } Elementary Course.
6. Nursing the patients.
7. Demonstration in Dissection Theatre.
8. Diagnosis of Diseases.

Fourth year—

1. Chikitsa (Charaka Chikitsa and Vagbhata Uttaratantra).
2. Midwifery. } Elementary Course.
3. Materia Medica. } Elementary Course.
4. Medicine. } Elementary Course.
5. Surgery. } Elementary Course.
6. Bacteriology. } Elementary Course.
7. Dispensary Attendance, Prescribing and Practical Demonstration.

Bhishagwara—Telugu Branch.

First year—

1. Sutrasthanam (Vaghbatam).
2. Paribhasha (Bheshajakalpa or Sarangadhara).
3. Rasathanthram (Rasapradeepam).
4. Physics. } Elementary Course.
5. Chemistry. } Elementary Course.
6. Laboratory Work.

Second year—

1. Nidanam (Vagbhata-Madhavanidana and Nadivijnanam).
2. Sariram (Vagbhata, Susruta and Prathyaksha Sariram).
3. Anatomy. } Elementary Course.
4. Physiology. } Elementary Course.
5. Compounding and Practical Demonstration in Laboratory.

Third year—

1. Nighantu (by Vaidyaratna Pandit D. Gopalacharlu).
2. Chikitsa (Basavarajeeyam—Treatment portion only, and Vagbhata Chikitsa and Kalpa).
3. Materia Medica. } Elementary Course.
4. Hygiene. } Elementary Course.
5. Nursing the patients.
6. Demonstration in Dissection Theatre.
7. Diagnosis of Diseases.

Fourth year—

1. Chikitsa (Vagbhata, Uttara Sthanam, complete).
2. Materia Medica. } Elementary Course.
3. Midwifery. } Elementary Course.
4. Medicine. } Elementary Course.
5. Surgery. } Elementary Course.
6. Bacteriology. } Elementary Course.
7. Dispensary Attendance, Prescribing and Practical Demonstration.

Bhishagwara—Tamil Branch.

First year—

1. Sutrasthanam (Vagbhatam).
2. Paribhasha (Bheshajakalpa or Sarangadhara).
3. Rasatantra (Rasapradeepa with Agasthya's Rasaprakriyas).
4. Physics. } Elementary Course.
5. Chemistry. } Elementary Course.

Second year—

1. Nidanam (Jeevarakshamrutam, Vagbhata Nidanam and Nadivijnanam).
2. Sariram (Susruta, Vagbhata and Prathyaksha Sarira).
3. Anatomy. } Elementary Course.
4. Physiology. } Elementary Course.
5. Compounding and Practical Demonstration in Laboratory.

Third year—

1. Nighantu (Padarthagunachintamani).
2. Chikitsa (Vagbhata Chikitsa and Kalpa and Treatment according to Agasthya Theory).
3. Materia Medica. } Elementary Course.
4. Hygiene. } Elementary Course.
5. Nursing the patients.
6. Demonstration in Dissection Theatre.
7. Diagnosis of Diseases.

Fourth year—

1. Chikitsa (Vagbhata, Uttara Tantra and Agasthya Rasatantra Chikitsa).
2. Materia Medica. } Elementary Course.
3. Midwifery. } Elementary Course.
4. Medicine. } Elementary Course.
5. Surgery. } Elementary Course.
6. Bacteriology. } Elementary Course.
7. Dispensary Attendance, Prescribing and Practical Demonstration.

(4)

An Abstract of curriculum for the Siddha system.

(*Prepared by M.R.Ry. Pandit C. S. Murugesa Mudaliyar Avargal.*)

First year.	Second year.	Third year.	Fourth year.	Fifth year.	Grades.
Anatomy	Anatomy ..	Hygiene	Medicine ..	Practical treatment and surgery for a period of six months in an hospital or under a trained medical practitioner.	B.Sc. (D.A.) (*a*).
Chemistry	Chemistry ..	Bacteriology ..	Treatment ..		M.Sc. (D.A.) (*b*).
Physics	Physiology ..	Pathology (general and practical).	Pathology (including mental diseases).		L.M.P. (*c*).
Biology	Materia Medica.	Materia Medica ..	Midwifery ..		....
Botany	Pharmacy ..	Pharmacy	Pharmacy ..		....
Dissections	Dissections ..	Minor surgery ..	Surgery		....
Pulsation, etc. (of eight methods).	Pulsation, etc.	Pulsation, etc. ..	Ophthalmology ..		....
....	Curing of drugs.	Medical Jurisprudence.	Diseases (special to women and children.)		....

(*a*) Thirty per cent in each subject and 35 per cent of the aggregate number of marks (Bachelor of the Science of Dravida Ayurveda).

(*b*) Thirty-five per cent in each subject and 40 per cent of the aggregate number of marks (Master of the Science of Dravida Ayurveda).

(*c*) Failure to secure a pass as above but qualified in one or more subjects and fit to practice only in special branches. Such of these may be called L.M.P. as under—

L.M.P. (Ophth.)
,, (Diseases of Women and Children) and so on.

(5)

THE EASTERN MEDICAL ASSOCIATION (UNANI), MADRAS.

The curricula of the Medical College.

[*N.B.*—*A.* = the College department courses ; B = School texts.]

First-year class.

Subjects.

1. Theoretical medicine—
   A. The Mujiz, Fann-i-Awwal.
   B. Kifaya-i-Mansuri, the portion of the Nazariyyat.
2. Practical medicine—
   B. Mizanut-Tibb.
3. Anatomy—
   A. The Tashnih-i-Kabir ; only the portions dealing with Izam, Arbetha and Azalat (bones, muscles and gouts).
   B. Same as for *A.*
4. Physiology—
   A. & *B.* From the beginning to the Nizam-i-Damawi.
5. Chemistry—
   A. & *B.* Mabadiyut-Tibb.
6. Materia Medica—
   A. The Sadidi.
   B. Intikhab-i-Makhzanul-Adwiyah.

NOTE.—Chemistry will be finished and a Preliminary examination will be arranged in the other subjects at the close of the year.

Second-year class.

Subjects.

1. Theoretical medicine—
   A. Aqsarai.
   B. The Mufarrihul-qulub, first, third and fourth maqala.
2. Practical medicine—
   A. Sharh-i-Asbab, Vol. II, up to the Hummayat (fevers).
   B. Tibb-i-Akbar. do.
3. Anatomy—
   A. & *B.* Ahsha-a-sadro-Batn, Aza-i-Nafsaniyyah (thorax abdomen and head and neck), Sharain and Awridah.
4. Physiology—
   A. & *B.* Manafi-ul-Kabir, from the respiratory system to the end.
5. Materia Medica—
   A. The Sadidi, and extracts from the Materia Medica.
   B. Intikhab-i-Mukhzon-ul-Adwiyah and the Materia Medica.
6. Medicine—
   (Select portions on western principles such as those relating to typhoid.)
   A. Lecture in medicine.
   B. The Makhzan-i-Hikmat, pages 222 to 372.

NOTE.—Demonstrations in Anatomy and Medicine will be finished and a final examination in these subjects will be arranged, the subjects of the first-year examination will also be included in this examination.

Third-year class.

Subjects.

1. Theoretical medicine—
   A. The Nafisi and Kulliyat-i-Quanun.
   B. Mufarreh-ul-Qulub, the Fifth Meqala.
2. Practical medicine—
   A. The Sharh-i-Asbab, Vol. I (except diseases of the chest and the lungs).
   B. Tibbi-i-Abkar, Vol. I, and Hummayat-i-Tibbi-i-Akbar.

*3. Medicine—
   A. Lecture.
   B. The Makhzanul-hikmat (relating to the diseases mentioned in foot-note below) and lectures.

* Lectures in medicine would be on the following subjects :—
Typhoid fever, malaria, smallpox, whooping cough (bronchial), pneumonia, pthisis, cholera, plague, dysentery, gonorrhœa, apoplexy diabetes and hysteria and syphilis.

4. Surgery—
   A. and *B.* The Kitabul-jirahat.
5. Midwifery—
   A. and *B.* Talimul-qabilah.
6. Bacteriology—
   A. and *B.* Lectures.
7. Hygiene—
   A. and *B.* Lectures.

NOTE.—(1) The education of the school class will be over and their final board examinations held.
(2) For the college class the final examination in Kulliyat (theory) and Hygiene will be held as also class examinations in other subjects.
(3) Practical training in medicine.

Fourth-year class.

Subjects.

1. Practical medicine—
   A. Hummayat-i-Quanun and Quanun-a-Sheikh relating to the diseases of the chest and the lungs.
2. Medicine—
   A. Lectures.
3. Surgery—
   A. Kitabul-jirahat.
4. Midwifery—
   A. Talimul-Quabila.
5. Bacteriology—
   A. Lectures.
6. Medical Jurisprudence.
   A. Extracts from the Medical Jurisprudence.

NOTE.—A certificate will be granted after the passing of this examination.

Divisions of Education.

Education in this institution has been divided into two parts :—

(1) The school course, extending to three years.
(2) The college course, extending to four years.

In the school classes the medium of education will be Urdu or Persian, while for college classes it will be Arabic. Some of the medical subjects, such as anatomy, physiology, hygiene, chemistry, medicine and surgery will be taught in Urdu on modern principles.

Another branch of Education.

Compounding.—The course of study extends over two years. Together with the Unani compounding, lectures are also delivered in pharmacy, chemistry and dressing.

Time for admission.—The regular academic year begins in Shawwal. New students will have their names registered in Shaban.

Conditions for admission.—Every educated person of any religion or creed will be admitted in the college on the following conditions :—

(1) For the school course the student must previously have a knowledge of Urdu or Persian equal to the School Final or the Upper Secondary Standard. For the college course the student must possess a knowledge of Arabic equal to the standard of the Arabic B.A., or Moulvi Fazil. If the student does not possess any regular certificate, he will be examined before admission, the standard of the examination being that of the abovementioned examination.

(2) The age of the student should not be less than fifteen or more than thirty.

(3) At the time of admission the student will have to present a testimonial with regard to his health, good character and nobility of pedigree.

(4) Generally the students are admitted in the lower classes. But in special cases such students as may have received their education in some other institution will also be admitted in higher classes, provided they are declared as having passed the examination of the lower classes. For such students, it will become necessary to attend the college for at least two years.

(6)

THE GOVERNMENT AYURVEDIC COLLEGE, JAIPUR.

I. Pravesha or Entrance Examination.

First paper	Madhavanidana and Rasamanjari.
Second ,, ...	Bhavaprakasa—End of Dravyaguna.
Third ,, ...	Chakradatta Chikitsasarasangraha and Gangadhara's Paribhasha.
Fourth ,, ...	Raghuvamsa, 3, 4, 5, 6 surgas and translation from and into vernaculars, of easy Samskrit passages.

II. Sastri Pariksha.

First paper	Charaka-kalpa and Chikitsasthana.
Second ,, ...	Susrutasarira and Rasendrasarasangraha.
Third ,, ...	Vagbhata samhita.
Fourth ,, ...	Champa Ramayanam and an essay in Samskrit.

III. Acharya Pariksha.

First paper	Charuka, the whole excepting the portion for Sastri examination.
Second ,, ...	Susruta do.
Third ,, ...	Rasendra Chintamani.
Fourth ,, ...	Sankhya Chandrika, Vedantasara, Yagnyavalkya Smriti (end of Dayabhaga) mitakshara (end of Vyavahara) and an essay in Samskrit on any given subject.

(7)

PRABHURAM AYURVEDIC COLLEGE, BOMBAY.

Courses of study.

[All instructions are given in vernacular.]

The whole course of study extends over five years, two years and a half for the junior course, and two years and a half for the senior course. Each course is divided into five academical sessions of six months each, and the student has to undergo two examinations in each course, Upavaidya and Rasavaidya in the junior course, and Bhishak and Bhishagwar and Graduate of the Prabhuram Ayurvedic College, in the senior course.

The junior course.

The junior course, which comprises the studies for the certificates of Upavadiya and Rasavaidya, consists of five sessions of six months each (two years and a half) both the studies running concurrently.

The course of studies for the certificate of Upavaidya.

This course consists of three academical sessions of six months each (one year and half) during which period a student has to study the following subjects :—

(1) Sharir (Anatomy).
(2) Tridhatu and Indriyavignan Shastra (Normal Temperaments and Physiology).
(3) Upavaidyaka (Minor clinical work).

The student has to make himself acquainted with the structure of the human body with its organs, to master the theory of Tridhatu (Normal Temperaments) with functions of different organs of the body and the practical study of minor clinical work necessary for assisting a practitioner in the treatment of patients. At the end of three academical terms of six months each, the student is examined in these subjects, and on passing in them is entitled to get the certificate of Upavaidya.

The course for the certificate of Rasavaidya.

This course consists of five academical sessions of six months each (two years and half) running concurrently with the course of Upavaidya, during which period the student has to study the following subjects :—

(1) Aushadhi Gunadosha (Materia Medica and Therapeutics).
(2) Vaidyakya Rasayan Shastra and Aushadhikriya (Medical Chemistry and Pharmacy).
(3) Vaidyakya Vanaspati Shastra (Medical Botany).

The student has to make himself acquainted with different medical, mineral, vegetable and animal drugs, to know their therapeutic uses, to study the chemical preparations containing Parad and the pharmaceutical preparations containing Ayurvedic drugs, to get acquainted with medical vegetable plants and their specimens crude and green, with their clinical uses. At the end of five academical sessions of six months each, the students is examined in these subjects, and on passing in them, is entitled to get the certificate of Rasavaidya. The studies for the certificates of Upavaidya and Rasavaidya run together.

Senior course.

The senior course for the certificates of Bhishak and the Degree of Bhishagwar and Graduate of the Prabhuram Ayurvedic College is of five academical sessions of six months each (two years and a half) both the studies running concurrently. Only those who have acquired the certificates of Upavaidya and Rasavaidya are admitted in these classes.

The course for the certificate of Bhishak.

The course for the certificate of Bhishak consists of three academical sessions of six months each (one year and a half) during which period a student has to undergo instructions in the following subjects :—

(1) Arogyashastra (Hygiene).
(2) Vishaprakarana (Toxicology).

(3) Nyayavaidyaka (Medical Jurisprudence).
(4) Tridosha and Rugnendryavignan (Abnormal Temperaments and Pathology.)
(5) Krumi Tantra (Bacteriology).

The student has to study Arogyashastra (Hygiene) in general and special, Rutucharya, Dincharya and Ratricharya, preventive medicine, poisons, their recognition and treatment, legal matters connected with different medical procedures, the knowledge of the condition of the diseased organs, abnormal temperaments, and the different germs and the part they play in producing diseases. At the end of three academical sessions of six months each (one year and a half) the student is examined in the subjects and on passing is entitled to get the certificate of Bhishak.

The course of study for the distinctions of "Bhishagwar and Graduate of the Prabhuram Ayurvedic College".

This course consists of five academical sessions of six months each (two years and a half) running concurrently with the course of Bhishak, during which a student has to undergo the studies of the following subjects :—

(1) Nidan Chikitsa (Theory and Practice of Medicine).
(2) Salya Shalakya Shastra (Surgery and Eye diseases).
(3) Sootika Shastra (Midwifery).
(4) Striroga (Diseases of women).
(5) Bala Roga (Disease of children).

The student has to study how to diagnose cases of different diseases as regards the organs affected as well as the temperaments disordered and to prescribe appropriate treatment keeping both the diseased organ and the disordered temperament in mind. He has also to study how to diagnose and treat different surgical diseases, to perform operations, and actually do minor surgical work under the supervision of the Professor. He has also to study the diagnosis and the treatment of different Eye diseases: also Midwifery and conduct of labour together with diagnosis and treatment of diseases connected with pregnancy, and diseases of women and children. At the end of five academical sessions (two years and a half), the student is examined in the above subjects, and on passing, he is entitled to get the distinctions of 'Bhishagwar and Graduate of the Prabhuram Ayurvedic College".

The courses of study for the female classes for the certificates of Savika and Paricharika.

The studies in the female classes comprise the courses for the certificates of Paricharaka and Savika and are of five academical sessions of six months each (two years and a half) both the studies running concurrently.

Paricharika.

The course of study for the certificate of Paricharika is of five academical sessions of six months each (two years and a half) during which period a student has to study the following subjects :—

(1) Paricharya (Nursing).
(2) Sharir (Anatomy).
(3) Sansargikaroga Vyavastha (Management of infectious cases).

A student has to study medical nursing, surgical nursing, nursing of infectious diseases, preparations for surgical procedures, clinical assistance to medical practitioners and necessary information in Anatomy.

At the end of five academical sessions of six months each (two years and a half) the student is examined in the above subjects, and on passing in them she is entitled to get the certificate of Paricharika.

Savika.

The course for the certificate of Savika is of five academical sessions of six months each (two years and a half) running concurrently with the studies for the certificate of Paricharika, during which period she has to study the following subjects :—

(1) Sootika (Management and conduct of normal labour).
(2) Suva Roga Vyavastha (Management of patients suffering from diseases of pregnancy and child bed).
(3) Stree Roga Vyavastha (Management of diseases special to females).
(4) Kaumar and Bala Roga Vyavastha (Management of diseases special to infants and children).

The student has to study how to conduct normal labour, also the management of patients expecting delivery, management of patients and their comports after delivery, management of diseases special to women, infants and children.

At the end of five academical sessions of six months each (two years and a half) the student is examined in the above subjects, and on passing in them she is entitled to the certificate of Savika.

(8)

Ashtanga Ayurveda Vidyalaya (College of Hindu Medicine).

Prospectus.

The Ashtanga Ayurveda Vidyalaya was established in 1916 with the object of imparting instruction in the Ayurvedic system on a thorough and up-to-date scientific basis and has since been successfully carrying out this mission. The Vidyalaya is fully equipped with Museums and Laboratories, such as Chemical Laboratory, Anatomical and Pathological Museums—a Museum for Materia Medica and pharmacy and a herbarium and a library.

Curricula for regular students.

The curricula of the Vidyalaya are spread over five years in the following order :—

First-year class.

Botany, Materia Medica, Chemistry, Anatomy, Physiology and practical classes in all these subjects, to be followed by an Annual Examination for promotion to the second-year class.

Second-year class.

Materia Medica and practical Pharmacy, Anatomy with practical demonstration and dissections, Physiology and Pathology, to be followed by an Annual Examination for promotion to the third-year class.

Third-year class.

Materia Medica and Practical Pharmacy, Surgical Anatomy and dissections, Pathology, medicine, surgery, midwifery and hospital practice (Indoor and Outdoor), to be followed by an Annual Examination for promotion to the fourth-year class.

Fourth-year class.

Medicine, Surgery and Operative Surgery, diseases of the eye, ear, throat and nose, bandaging and demonstrations in surgery, special study of the pulse, hygiene, Toxicology Dentistry and Hospital practice (Indoor and Outdoor), to be followed by an Annual Examination for proficiency certificate and promotion to the fifth-year class.

Fifth-year class.

Special study of the *pulse*, Hospital practice (12 months), clinical demonstrations in medicine and surgery, principles of health and *longevity*, Philosophy of Ayurveda to be followed by the Final Examination for Diploma.

Charitable dispensary.

There is a Charitable Dispensary attached to the Vidyalaya where all students receive regular practical training from 8-30 a.m. to 10–30 a.m.

(9)

D.A.V. College, Lahore.

Ayurvedic School.

Scheme of studies.

First year—

1. Anatomy	(*a*)	Theoretical—Sanskrit Sushrut's Sharirsthan.	25 Lectures.
	(*b*)	Theoretical—On modern lines. Pratiyaksh Sharir by Dr. Gana Nath sen or Anatomy in Hindi by the Demonstrator of Medical College, Lucknow.	Five periods a week in summer and four periods a week in winter.
		Demonstration by charts, mode's bones, etc.	Three periods in winter, once a week.
	(*c*)	Practical—Dissection.	
2. Physiology ..	(*a*)	Theoretical—Selections from Sanskrit books. Text book to be prepared.	Ten lectures.
	(*b*)	Theoretical—On modern lines. Text book in Hindi to be prepared or translated from Bengalee. Demonstration by charts, models, bones, etc.	One period a week.
	(*c*)	Practical. (The period given to Anatomy will suffice for this purpose also).	

First year—*cont.*		
3. Materia Medica Theoretical—	(*a*) A small primer of Botany in Hindi. (The book to be written or translated from Bangalee.) (*b*) Dharprakash Nighantu, whole. Study of drugs in museum with the help of a Hindi text-book to be specially prepared for the purpose.	Six periods a week.
	Study of living plants in a botanical garden, or by means of excursion to hills.	15 visits, each taking three periods.
4. Diagnosis	(*a*) Madhav Nidan, first half .. .. .. (*b*) Nari-Vigyan, the whole .. .. .. (*c*) Use of thermometer, stethescope, urine examination (Ayurvedic and Allopathic methods).	Five periods a week.
5. Treatment of diseases.	Chakradatta, one part	Do.
6. Chemistry and Physics.	Both theoretical and practical. Text-book to be prepared.	Three periods a week.
Second year—		
Pharmacy	Rasenda Sar Sangrah	Five consecutive periods.
	Preparation of medicines per separate list ..	Three times a week in winter and once a week in summer.
Diagnosis	(*a*) Madhav Nidan, the whole .. .. .. (*b*) A small treatise on diseases as explained by the modern system. Text to be prepared.	Five periods a week.
Treatment of diseases.	Chakradatta, the whole	Five periods a week.
	Hospital attendance	Four periods, three times a week.
Hygiene	(*a*) Selections from Shastras .. .. .. (*b*) A special text-book to be prepared on modern lines.	Four periods a week.
	Books for (*a*) as suggested by the Ayurveda Vidya Pith (see page 7).	
Poisons and their treatment.	Selection from Shastras as given by Ayurveda Vidya Pith (see page 10). A small book on poisons not covered by the above to be prepared for the purpose.	One period a week.
Surgery	Selections from Shastras as given by the Ayurveda Vidya Pith (see page 9).	Two periods a week.
	Some modern surgical instruments to be shown and their uses explained.	Ten lectures.
	Some minor surgical operations to be performed.	Hospital attendance as provided before sufficient for the purpose.
Third year—		
Principles and practice of medicine.	(*a*) Sutarsthan of Charak omitting the chapters noted at foot of this page.* (*b*) Chikitsasthan of Sushrat	One period a day.
	(*c*) Hospital duties	Four periods, three times a week.
Pharmacy	Preparation of medicines both metallic and vegetable as given in a separate list attached.	They may work with second year students, five periods thrice a week in winter and once in summer.
Diagnosis	Charak's Nidansathan and Madhukush Vyakhya.	One period a day.
Surgery	Advance course and practice	Two periods a day.

* डन्द्रियो चक्र मणीय, तिस्रैषिणीय, यज्ञपुरुषीय, आत्रेय भद्रकापीय, अर्थदशमहामलय ।

Fourth year—

Principle and practice of medicine.	(a) Charak's Chikitsasthan, Indristhan and Vimansthan.	One period a day.
	(b) Hospital duties	Four periods, three times a week.
Pharmacy ..	.. Preparation of medicines as per separate list ..	They may work with second year and third year students, five periods, three times a week in winter and once in summer.
Diagnosis ..	.. Charak's Nidansthan. Some work on diagnosis of diseases on modern lines.	Six periods a week.
Surgery ..	.. Advance course and practice	Two periods a week.

(10)

The Ayurveda Mahavidyalaya, Rishikul.

I. Upadhyaya Examination.

First year—

First paper ..	.. Madhava Nidana (Purvardham).
Second ,, ..	.. Bhavapraka Nighantu (Urvyadivarga).
Third ,, ..	.. Bhavapraka Sariraprakaranam, and Yogaratnagara to Ratri Charya.
Fourth ,, ..	.. Paribhasha by Gangadhara and Pathyapathya.
Fifth ,, ..	.. Chakradatta (Purvardham).

Second year—

First paper ..	.. Madhavanidana (complete).
Second ,, ..	.. Bhava Nighantu (,,).
Third ,, ..	.. Chakradatta (,,).
Fourth ,, ..	.. Rasaprakasa (,,).
Fifth ,, ..	.. Nadivignyana by Kanada and Practical and Oral examinations.

II. Vaidyasastri Pariksha.

First year—

First paper ..	.. Nidana (complete) in Charaka Susruta and Vagbhata.
Second ,, ..	.. Kalpasthana (complete) in Charaka Susruta and Vagbhata.
Third ,, ..	.. Sarira (complete) Susruta.
Fourth ,, ..	.. Charasariru, Vimana, Indriya and Sidhisthanas.
Fifth ,, ..	.. Agadatantram—Susruta.

Second year—

First paper ..	.. Essence of Madhukosha Vyakhya.
Second ,, ..	.. Vagbhata Sutrasthana.
Third ,, ..	.. ,, Sarira.
Fourth ,, ..	.. ,, Chikitsa.
Fifth ,, ..	.. Susruta Salya and Salakya with Nibandha Sangraha and Oral Examination.

III. Acharya Examination.

First year—

First paper ..	.. Charaka—Rest (complete).
Second ,, ..	.. Ayurvedaprakasa.
Third ,, ..	.. Rasendrasara.
Fourth ,, ..	.. Harita Samhita (half).
Fifth ,, ..	.. Prasuti Sasthram.

Second year—

First paper ..	.. Susruta—Rest (complete).
Second ,, ..	.. Vagbhata—Rest (complete).
Third ,, ..	.. Harita Samhita—Rest (complete).
Fourth ,, ..	.. Rasayanasasthram with questions on the application of the theories in the preparation of medicines.
Fifth ,, ..	.. Treatment and Materia Medica.

Oral Examination.

Candidates will be orally examined in the following subjects :—
(1) Materia Medica and Therapeutics.
(2) Diagnosis.
(3) Treatment.

(11)

The Government Ayurvedic College, Mysore—Scheme of Ayurvedic Studies approved by the Government of Mysore.

Curriculum of studies for the higher course.

I. *Sarira Sastram.* (Physiology, Anatomy and Histology.)

II. *Dravyaguna Sastram.* (Materia Medica, Pharmacy and Therapeutics.) The properties and uses of materials, together with the technology (Paribhasha thereof).

III. *Rasa Sastram.* (Indian Chemistry or the Science of metals and minerals.) Purification, medicinal preparation and uses of metals, minerals, etc.

IV. *Swasthavrittam.* (Hygiene and Sanitary Science.) Includes Engenics, Vaccination, Inoculation, Disinfection, etc.

V. *Rogavijnanam.* (Pathology, Symptomology and Bacteriology.) Diagnosis of alkalines of diseases, their Etiology and Symptomology.

VI. *Kayachikitsa.* (Medicine.) Knowledge of medicines such as Rasayanas (Alteratives) and Vajikarana (Aphrodisiacs) and treatment of all kinds of diseases, endemic and epidemic, pertaining to women, children, etc.

VII. *Salyatantra and Salakya.* (Surgery.) Practical work with clinical training and hospital practice. Knowledge of diseases of the organs of the head and of women and their treatment. Knowledge of surgical instruments and appliances.

VIII. *Prasutitantra.* (Midwifery and Gynæcology.) Knowledge of obstatrics and Gynæcological appliances.

IX. *Kaumara Bhritya.* (Pædiatrics.) Knowledge of diseases peculiar to just-born babes, their treatment and the nursing of children.

X. *Manasaroga.* (Mental Diseases.) Their knowledge and treatment.

XI. *Agadatantra.* (Toxicology.) Varieties of poisons and treatment of their effects.

XII. *Vyavaharayurveda.* (Medical Jurisprudence.) Knowledge requisite for the purposes of evidence in medico-legal cases.

XIII. *Pasvayurveda.* (Veterinary Science.) Diseases of animals and their treatment.

XIV. *Ayurveda-Itshasa.* (History of Ayurveda, its development and vicissitudes).

(12)

The Government Ayurvedic College, Trivandrum.

First-year course.

I. *Sarira Vijnanam.* (Physiology, Anatomy, etc.)
II. *Dravya Vijnanam.* (Properties and uses of medicines—Materia Medica.)
III. *Hygiene.*
IV. *Roga Vijnanam.* (Pathology, etc.)

Second-year course.

I. *Sarira Vijnanam.* (Physiology, Anatomy, etc.)
II. *Dravya Vijnanam.*
III. *Arogya Vijnanam.* (*Hygiene.*)
IV. *Roga Vijnanam.* (Pathology, etc.)
V & (1) *Baishgya Vijnanam.* Science of treatment (first half).
(2) *Surgery.* (First half.)

Third-year course.

I. *Sarira Vijnanam.* (Physiology, etc.)
Dissection. Anatomy.
III. *Hygiene.* (Second half.)
IV. *Roga Vijnanam.* (Pathology.) Second half.
(Portions prescribed for the study.
V. *Baishgya Vijnanam.* (Treatment.)
(2) *Surgical.*

Fourth-year course.

I. *Sarira Vinjanam.* (Physiology, Anatomy, etc.)
Dissection. (Practical.)
III. *Hygiene.* Lessons from Modern Medical Books.
IV. *Roga Vinjanam.* (Pathology.)
Baishgya Vinjanam.
Treatment of poison cases.

Midwifery.

Rules of conduct during pregnancy—Genesisology (change of the sex of the foetus by the application of internal medicines).

Special symptoms of pregnancy (such as the tendency to vomit, etc.), abortion (Garbhasravom, Mudha-Garbha). Diseases of the women in confinement. Rules of conduct during confinement. Process of easy delivery.

Diseases of Infants.

Nursing, Purification of the mother's milk, Galactagogues.
Mental Diseases.

Treatment of Infectious and Contagious Diseases.

Cholera, Smallpox, Plague—Treatments.

Fifth-year course.

The prescribed course of study for the first four years enables a careful student to obtain first-hand knowledge of the great Ayurvedic works such as Charaka, Susrutha, Ashtangahridaya, Ashtanga Samgraha, Madhavanidanam, etc. Hence the fifth year course is mainly intended for practical instructions. Practical classes will be conducted in the Ayurveda Pharmacy and Ayurveda Hospital, where batches of students will have to undergo training, as a result of which, it is hoped, that they will derive the benefit of 'Abhyastha Karmata' and 'Drishtakarmatha'. The following special portions also are prescribed for the course :—

1. Ayurvedic Jurisprudence (Vyavahara Ayurveda).

(13)

THE NATIONAL MEDICAL COLLEGE (AYURVEDIC SECTION)—CALCUTTA.

First year—

1. *Sarira Vijnana.* Anatomy with Physiology.
Texts. Susruta Sarira.
Charaka Sarira, Vimana, and Sutrasthana.

2. *Padartha Vijnana.* Dravyagunakarma Vichara Rupa Rasudi Nirupana.
Charaka—Sutra.

3. *Dravya Vijnana.* Botany with Materia Medica.
Haritakyadi, Guduchyadi, Karpuradi vargas, etc.
Susruta—Sutra.
Bhavaprakara—Nighantu.

4. *Rasa Vijnana.* Parada Samskara.
Rasoparasa and Vesopavisa.
Dhatu-Upadhatu—Sodhana, Marana, etc.
Rasendrasarasangraha.

5. *Paribhasha-Pharmacology.* Kalinga and Magadha Mara, Swarasadi Lakshana, preparation of oils and ghees, Ritu Bheda Dravyasangraha, etc.
Paribhasha Pradipa.

6. *Sarangadhara Samhita.* Purvakhanda.

7. *Roga Vijnana.* Pathology and Symptomology.
Madhava Nidana, up to Hridroga.

8. *Kayachikitsa.* Practice of medicine—Dosha, Chaya, Prakopa, Prasamanprakar, Nidanapanchaka, Doshasthana, etc.

Second year—

1. *Nadi Vijnana.* Nadipariksha tatwa.
Nadi Vijnana (complete).

2. *Sarira.* Anatomy with Physiology, Garbhotpathi, Sukrartava, Stri-Purusha Garbhakaran.
Susruta-Sarira.
Charaka-Vimana and Sarira.
Ashtangahridaya-Sarira.

Padartha Vijnana—
Detailed study—
Susruta—Sutra.
Charaka—Vimana.
Ashtangahridaya—Sutra.

Dravya Vijnana. Botany with materia medica (Dravya, Rasa, Guna, Virya, Vipaka, Prabhava, Phala varga, Jala varga, etc.)—
Charaka-Sutra.
Susruta—Sutra.
Ashtangahridaya—Sutra.
Bhavaprakasa Nighantu.

Roga Vignyana. Pathology and Symptomology—
Madhava Nidana (complete).
Charaka ,, ,,
Susruta ,, ,,

Kaya Chikitsa. Practice of Medicine (Jwaradi Vyadhi, Upadravadi Chikitsa)—
Rasendrasara Sangraha from Jwaradhikara to Hridroga.
Chakradattu do. do.
Pathya Pathya do. do.

Third year—

Sarira. (Anatomy and Physiology)—
Sira, Dhamani, Snayu, Marma Vivarana, Paka Vivarana Rasadi Dhatu Utpattikrama.
Susruta—Sarira and Sutra.
Charaka. Sarira, Vimana, Chikitsa, Sidhi, etc.

Padartha Vignyana— —
Detailed study—
Srishtikrama. Tridosha Vichara.
Susruta—Sutra, Sarira.
Charaka—Sarira.
Pancha Nidana—Madhukosha Vyakhya.

Roga Vignyana. (Pathology and Symptomology).
Madhava Nidana—(Complete).
Charaka—Indriya.
Susruta—Sutra.

Kaya Chikitsa. (Practice of medicine)—
Panchakarma Prakara and Swastha Vritta.
Chakradatta—Complete.
Rasendrasarasangraha (complete).

Salya Chikitsa.—Vrana samanya vignyana, Sadyovrana Chikitsa, Vrana, Aropana, Bandhana, Sravana Chikitsa, methods of Sastrukarma, Jalaukavacharaṇa, Agnikarma, Ksharakarma and Sonitamoksha :—
Susruta—Sutra, Sarira.
Charaka—Chikitsa.

Fourth and fifth year—
Kaya Chikitsa, Salya Chikitsa, Salakya Chikitsa, Agada Chikitsa, Bhuta Vidya, Kaumarabhritya, Rasayana, Vajikarana, Garbhini Paricharya, Mudhagarbha Sisupalana Vidhi, Charya, Vrana Bandhana.

Clinical Medicine. (In-door and out-door practice)—
Charaka, Susruta and Ashtangahridaya.

Tatwanveshana Vibhag—
Anatomy, Surgery, Physiology, Chemistry, Physics and Botany.

(14)

THE GURUKUL AYURVEDIC COLLEGE, KANGRI.

The courses are arranged as shown below and include a course in the essentials of Allopathic medicine also :—

FIRST YEAR.

First term.

Ayurvedic course—Theoretical.

At the College—
(1) Vaghbhata—Sutrasthan—Chapters 1, 2, 3, 4, 9, 10 and 12.
(2) Susruta—Sarirasthana—(Complete).
(3) Madhava Nidana to the end of Pandu Nidana with the commentary of Madhukosha.

At Home—

(4) Sarangadhara—Purvakanda—fourth and Madhyawakhanda—first ten chapters.

(5) Bhavaprakasa Nighantu from the Haritakyadi to Guduchyadi vargas.

(6) Vagbhata—Sarirasthana—first four chapters.

Practical.

Preparations of Kangri, Dhanyamla, etc., identification and description of Dhatu and Upadhatu, Visha and Upavisha and preparation of Churna, Vatika, etc.

Allopathic course.

(1) Materia medica—All about official drug are to be completed in this course.

(2) Sarira—A general knowledge of the anatomy of the human organism, in addition to a special study of bones and joints.

Second term.

Ayurvedic course—Theoretical.

At the College—

(1) Madhava Nidana, with commentary to end of Prameha.

(2) Dravyaguna Sangraha with Sivadasa's commentary—Complete.

(3) Charaka—Sutrasthana—First 11, 27 and 28 chapters.

At Home—

(4) Susruta—Sutrasthana—41 to 46 chapters.

(5) Vagbhata—Sutrasthana—5 to 8 chapters.

(6) Bhavaprakasa Nighantu from Pushpavarga to Anckarthavarga.

Practical.

Instructions in Sodhana, Jarana and Marana of Gold, Silver, Copper, Vanga and Sisaka.

Allopathic course.

(1) Carbon compounds and synthetic preparations, omitting non-official drugs. Question will not be set on the nativity and other such details of these drugs, but on the therapeutic properties, action and uses and in the case of poisonous drugs, their symptoms and antidotes also.

(2) Sarira—The sympathetic and the blood-vascular systems.

SECOND YEAR.

First term.

Ayurvedic course.

At the College—

(1) Madhava—Nidana—Complete with commentary.

(2) Charaka—Nidanasthana—Complete.

At Home—

(3) Vagbhata—Nidanasthana—Complete, and Sarirasthana 5 and 6 chapters.

(4) Susruta—Nidanasthana—Complete and chapters 28 to 34 of the Sutrasthana.

Practical.

The eighteen processes of the purification of mercury and the preparation of Rasa Sindura, Rasakarpura, Makaradwaja, etc.

Allopathic.

(1) Materia medica—the non-official drugs completed in this course. Candidates will be expected to have knowledge of the source, distribution, etc., of these drugs though they may not necessarily be questioned on these portions.

(2) Sarira—The construction and distribution of the nervous systems.

Second term.

At the College—

(1) Charaka—Rest of Sutrasthana and Indriyasthana.

(2) Rasendra Sarasangraha—Jarana-marana Prakarana.

(3) Paribhasha, complete.

At Home—

(4) Ayurvedaprakasa—(complete).

(5) Susruta—Rest of Sutrasthana.

Practical.

Sodhana, Jarana, Marana of Loha Abhraka, etc.

Allopathic course.

(1) Two lectures on splints, etc., a knowledge of the uses of the several surgical instruments.

(2) Sariraka—Pravasa Samsthana, Bharana Samsthana, Suktha Samsthana, the formation, the development, etc., of the foetus.

THIRD YEAR.

First term.

Ayurvedic course—Theoretical.

At the College—

(1) Charaka—Chikitsasthana—Complete.

At Home—

(2) Vagbhata—Chikitsasthana.

Practical.

Preparations of ghees and oils, as well as Modaka, Asava, Areshta, Arka, etc.

Allopathic.

(1) Nidana and Chikitsa—a general knowledge of medicine with medical pathology—specific fevers.

(2) Salya Chikitsa—A general knowledge of surgery and surgical pathology—Surgery of bones, catilages, ligaments, etc.

Second term.

At the College—

(1) Chikitsa Sangraha with commentary—Complete.

(2) Rasendra Sarasangraha—Continued (to be completed in this course).

At Home—

(3) Susruta—Kalpathana and Uttara tantra—Complete.

Practical.

Sodhana of Visha, Upavisha, Haritala, Manasila, etc., and the application of enemala of all kinds.

Allopathic course.

(1) Medicine—General constitutional disease.

(2) Salya—Regional surgery.

FOURTH YEAR.

First term.

Ayurvedic course—Theory.

At the College—

(1) Charaka—Sarira and Vimanasthanas—Complete.

(2) Nadivijnana—Complete.

At Home—

(3) Vagbhata—Kalpasthana and Uttara tantra—Complete.

Practical.

Diagnosis of diseases, the examination and interpretation of pulse-conditions and sick-nursing.

Allopathic.

(1) Nidana and Chikitsa—Diseases of blood, blood-vessels and ductless glands, Granthika Rogas, Diseases of skin and Vata Rogas.

(2) Salya Chikitsa—Abdominal surgery, the surgery of the reproductive system (both male and female).

Second term.

Ayurvedic course—Theoretical.

(1) Charaka—Siddhisthana and Kalpasthana—Complete.

Practical.

Portions of the first term to be continued and completed.

Allopathic.

Medicine—

(1) Discourse on the comparative study of diseases and treatment.

(2) Surgery—Surgery of the extremeties.

(15)

THE AYURVEDA PATHASALA, BOMBAY.

The College was started on 6th October 1916 (Aswina Sukla Dasami 1972) under the management of the Ayurveda Adhyapaka Mandali with a view to promulgate and encourage the study of Ayurveda in a scientific manner. Two professors who are members of the Mandali give instructions to the students in the College.

The College trains student for the All India Ayurveda Vidyapeetha examinations and follows the syllabus framed by that body for the respective examinations.

At present, the students are trained, for the Vaidya and Ayurveda Visarad Examinations only.

The course of study extends over two years for the Vaidya examination, and three for the Visarada test ; these courses are as under :—

Vaidya Examination.

First year.

Sarangadhara Samhita, first and second Khanda.
Madhava Nidan (Complete)
A general knowledge of Human Anatomy and Physiology (from notes by the Professor)

Second year.

Sarangadhara—Uttarakhanda.
Haritakyadi Nighantu.
Rasendrasara Sangraha (Purvadha).

Ayurevda Visarad Examinations.

Sarira Dravyaguna, Swasthavritta, Rasasastro, Kayachikitsa, Salya, Solakya, Agodatantra, (eight subjects).

The text-books used are Charaka, Susruta, Protyaksha Sarira, Vananshadhi Darpana and the like.

Education is given free to the student ; in some cases, students will also be helped to some extent to buy books.

The mission is open only to candidates who pass in the entrance examination which will be conducted at the College in the subjects :—

Vyakarana. Laghu Kaumudi.
Kavya. Raghuvamsa—5 sargas.
Kavya. Kiratarjuniya—5 sargas.
Translations from and into vernaculars of easy Sanskrit passages, in prose and verse.
Nyaya. Tarka sangraha mula.
English. A knowledge up to the fifth-class standard.

N.B.—If a candidate is not conversant in Nyaya before admission, he will be given a special teaching in that subject at the College.

(16)

Curriculum of the Ayurvedic and Unani Tibbi College, Delhi—Yunani Branch,

Class.	Serial number.	Subject.	Text-book—Arabic class.	Text-book—Urdu class.	Remarks.
First year.	1	Kulleyat—[i.e., General principles of Medical Science].	Moojiz-ul-Kanoon (in Arabic).	Ejada Kabir [Urdu translation of Moojiz-ul-Kanoon].	(*a*) Dissection and Demonstration of Anatomy on human dead body.
	2	Anatomy ..	Tashrih-Kabir (in Urdu).	Tashrih-Kabir [in Urdu].	(*b*) Prelminary or test examination in all the three subjects.
	3	Physiology ..	Munafa-Kabir (in Urdu).	Munafa Kabir [in Urdu].	....
Second year.	1	Kulleyat—[i.e., General principles of Medical Science].	Kulliyat-i-Nafisi (in Arabic).	Urdu Translation of Kulliyat Nafisi.	(*a*) Anatomy, Physiology and principles of Medical Science to be completed at the end of the second year.
	2	Anatomy ..	Tashrih-Kabir (in Urdu).	Tashrih Kabir [in Urdu.]	(*b*) Dissection and demonstrations to be completed.
	3	Physiology ..	Munafa Kabir (in Urdu).	Munafa Kabir [in Urdu].	(*c*) Test or Preliminary Examination in Materia Medica and final examination of the remaining three subjects.
	4	Materia Medica.	Nafisi, Part II (in Arabic).	Urdu Translation of Nafisi, Part II.	(*d*) Hospital practice, with practical lessons on 'First Aid" and use of splints, etc.
Third year.	1	Materia Medica.	Nafisi, second portion in Arabic).	Urdu Translation of Nafisi, second portion.	(*a*) Final Examination in Materia Medica and Pathology and Text Examination of the remaining subjects.
	2	Medicine ..	Sharah Asbab, Volume II (in Arabic).	Urdu Translation of Sharah Asbab.	(*b*) Hospital practice.
	3	Pathology ..	Lectures on Pathology (in Urdu).	Lectures on Pathology [in Urdu].	(*c*) Clinical Lectures on in-door and out-door patients.
	4	Surgery ..	Lectures on Surgery (in Urdu).	Lectures on Surgery [in Urdu].	....
Fourth year.	1	Medicine ..	1. Sharah Asbab, Volume I, and	Urdu translation of Sharah Asbab, Volume 1 and	(*a*) Hospital practice.
	....		2. Hoommeyat Kanoon (in Arabic).	2. HoommeyatKannon.	(*b*) Clinical Lectures on in-door and out-door patients.
	2	Surgery ..	Lectures on Surgery (in Urdu).	Lectures on Surgery [in Urdu].	(*c*) Final examination with practical examination in Medicine and Surgery.
	3	Midwifery ..	Lectures on Midwifery (in Urdu).	Lectures on Midwifery [in Urdu].	Note.—Only elementary lecture would be delivered in Midwifery.

(16)

Curriculum of the Madrasa Tibbia Zenana and Shifa Khana, Delhi.

We have two courses of medical training.

One of these is a two years' course and the other extends to four years. Besides we have classes for the training of nurses and a calss in which lessons in pharmacy are given to those who intend working as compounders. Generally these have to be under training for two years, after which they are examined and certificates are granted to them.

First year, English course.

Midwifery by Dr. Miss Brown, Half, Makhzan-ul-Hikhmat, from pages 96 to 252.

First year, Unani course.

Practice of medicines.
Pathology, from 14 to 60 pages.
Treatment, from 61 to 84 pages.
Anatomy, Physiology of the female organs from First part, half, Materia Medica, Medical technical words.

First year, Vedic course.

Imrat Sagar.
Bechain Khand.

Second year, English course.

Makhzan-ul-Hikhmat, from 1 to 96 pages.
Midwifery by Dr. Miss Brown, full.

Second year, Unani course.

Practice of medicine.
Pathology, treatment.
Physiology, from page 84 to end.
Physiology of the female organs from First part, half, Makhzan-ul-Hikhmat, from 1st to 96 pages.
Materia Medica, Fifty medicines connected with Pharmacopœia.

Second year, Vedic course.

Nidhan Khand.
Chikatsa Khand.

Third year, English course.

Makhzan-ul-Hikhmat, from 253 to 461 pages.
Dr. Airbury's Midwifery, half.
Pharmacy and Materia Medica, from 44 to 102 pages.

Third year, Unani course.

Treatment, Tibb-i-Akbar, First part.
Materia Medica.
Makhzan-ul-Mufridat, Fifty medicines.
Treatment of female diseases.
Physiology of the female organs, first half from Fourth part.

Third year, Vedic course.

Bhao-par-Kash, First part.

Fourth year, English course.

Midwifery by Dr. Airbury, whole.
Makhzan-ul-Hikhmat, from 1424 to 2575 pages.
Anatomy, First aid, Surgery.

Fourth year, Unani course.

Women diseases, physiology of the female organs from fourth part to last part, treatment, Tibb-i-Akbar, two parts.
Materia Medica.
Makhzan-ul-Mufridat, Ten medicines.

Fourth year, Vedic course.

Bhao-par-Kash, Second part.

(16)

Curriculum of the Ayurvedic Section of the Ayurvedic and Unani Tibbi College, Delhi.

Sanskrit.

First year—

1. Madhava—Nidana (Up to Vata-Vyadhi).
2. Nari—Vignana.
3. Bhava—Prakash-Nighantu.
4. Sharnga—Dhar .. .. (Whole).
5. Ayurveda—Vignana .. .. (Sharira).
6. Hamaree-Sharir-ki-Rachna (Anatomy and Physiology)) .. (In Hindi, Part I).

Second year—

1. Madhava Nidana .. .. (Whole).
2. Chakradutta .. .. (,,).
3. Rasendrasarasangraha .. .. (,,).
4. Ayurveda—Vignana .. .. (Sharira).
5. Hamaree-Sharir-ki-Rachna (Anatomy and Physiology) .. (In Hindi, Parts I and II).

Third year—

1. Charaka—Sanghita .. .. (Half).
2. Shusruta—Sanghita .. .. (,,).
3. Bhagbhata .. .. (,,).
4. Rasaratna—Samuchhaya.
5. Lectures on principles of medicine.

Fourth year—

1. Charaka—Sanghita .. .. (Whole).
2. Shusruta—Sanghita .. .. (,,).
3. Bhagbhata .. .. (,,).
4. Rasaratna—Samuchhaya .. .. (,,).
5. ,, ,, and Minor and Emergency Surgery.

Hindi.

First year—

1. Madhava—Nidan .. .. (Up to Vata-Vyadhi).
2. Bhava—Prakash-Nighantu.
3. Sharnga—Dhar .. .. (Whole).
4. Vaidyakshiksha .. .. (Shareer).
5. Nari—Vignana .. .. (Whole).
6. Hamari-Sharir-ki-Rachna .. .. (First Part).

Second year—

1. Chakradutta .. .. (Whole).
2. Rasendar-Sara Sangraha .. .. (,,).
3. Madhava—Nidan .. .. (The rest of what has been left in first year.
4. Vaidyakshiksha .... (Whole).
5. Hamari-Sharir-ki-Rachna .. .. (Part II).

Third year—

1. Shusruta—Sanghita .. .. (Half).
2. Charak—Sanghita .. .. (,,).
3. Bhagbhata .. .. (,,).
4. Rasaratna—Samuchhaya .. .. (,,).
5. Principles of Medicine (Modern).

Fourth year—

1. Shusruta—Sanghita .. .. (Whole).
2. Charak—Sanghita .. .. (,,).
3. Bhagbhata .. .. (,,).
4. Rasaratna—Samuchhaya .. .. (,,).
5. ,, ,, and Minor and Emergency Surgery (Oral Lectures).

APPENDIX IX.

A.—List of works extant (both printed and manuscript) of Indian medicine.

Contents.

List A	.. ..	Ayurveda.
,, B	.. ..	Siddha.
,, C	.. ..	Unani.

List A.—Ayurvedic Works in Sanskrit.

The following is a list of works written in Sanskrit only; there are a very large number of other works written in the various vernaculars of the Presidency; but it is regretted that the list for vernaculars other than Tamil could not be completed by the time the main report was ready for the Press: *

List of Ayurvedic works in Samskrit commonly used as text-books.

Charaka Samhita (in Sanskrit), translated into English and several vernaculars.
Susruta Samhita (Sanskrit), translated into English, Urdu, Bengali, Gujrati, Hindi and other languages.
Bhagbhata Samhita (Sanskrit), translated in Urdu, Hindi and Bengali.
Ashtanga Samgraha (Sanskrit).
Chakradatta (Sanskrit).
Bangasen (Sanskrit).
Brinda Madhav (Sanskrit).
Trisati (Sanskrit).
Gadanigraha (Sanskrit).
Sharangdhara Sanhita (Sanskrit).
Birhadyoga Tarangini (Sanskrit).
Bhava Parkash (Sanskrit), translated in Hindi, Bengali and Gujrati dialects.
Yogaratnakar (Sanskrit).
Rasaratnakar (Sanskrit).
Brihadnighant Ratnakar (Sanskrit), translated in Hindi.
Rasendra Sara Sangraha (Sanskrit), translated in Hindi and Bengali.
Ayurveda Prakasha (Sanskrit).
Rasaratna Samuchaya (Sanskrit), translated in Gujrati.
Rasparkasha Sudhakar.
Rasasara (Sanskrit).
Rasa Sanketa Kalika (Sanskrit).
Rasayan Khand.
Rajamartanda (Sanskrit).
Vaidyamanorama.
Sidhamantra.
Raja Nighantu, including Dhanvantri Nighantu (Sanskrit).
Banaushadhi Darpan, translated in Bengali.
Rasraja Mahodadhi (Hindi).
Madana Pal Nighantu (Sanskrit); also translated in Hindi.
Rasachintamani (Sanskrit), translated in Hindi.
Rasendara Chintamani (Sanskrit), translated in Bengali.
Rasamanjari (Sanskrit), translated in Hindi.
Rasahirdaya Tantra (Sanskrit).
Shoeshan Vaidyak (Sanskrit), Hindi also.
Rajaballbha Nighantu (Sanskrit), Hindi also.
Rasendra Bhaskar (Sanskrit and Hindi).
Salagram Aushdhi Shabda-Sagar (Sanskrit).
Dravyaguna by Chakrapani Datta.
Jamini Bhushan Ray Roga Vinischayah.
Do. Kumaratantram.
Do. Vishatantram.
Do. Prasutitantram.
Do. Shalakyatantram.
Gananatha Sen, Pratyaksha Shareeram.
Do. Siddhanta Nidanam.

List of printed works in Samskrit other than those used as text-books.

Arkaprakasa with Hindi Commentary.
Anjananidana do.
Ajirnamanjari do.
Anupanadarpana.
Anupantarangini.
Nadignyanatarangini.
Aswavaidyam.
Ashtanga Hridaya with Sarvangasundari.
Do. with Hindi Commentary.
Do. with Malayalam Commentary.
Do. with Telugu Commentary.
Do. with Tamil Translation.
Ashtangasangraha with Induvyakhya.
Ayurveda Vignyanam, Parts 1 and 2.
Do. Sushena with Hindi.
Aushadhikalpadhyaya do.
Aushadhiprakasa do.
Kakaratnam do.
Kalagnyanam do.
Katamudgarakyam with Commentary.
Do. with Hindi.
Kumaratantram do.
Gaurikanchalikatantram.
Chakradatta-Chikitsa.
Do. with Commentary.
Do. with Hindi notes.
Charaka Samhita with Commentary Nirmala.
Do. with Hindi notes.
Do. with Chakrapani's Commentary.
Do. with Jogindranath Sen's Commentary.
Do. with Malayalam notes.
Charya Chandrodaya with Hindi notes.
Chikitsanjana.
Vaidyavallabha.
Chikitrakhanda with Hindi notes.
Chikitsakrama Kalpavalli.
Dravyaguna with Sivadasa's Commentary.
Do. with Hindi.
Dravyaguna Sataka with Hindi.
Gnyana Waishayya Manjari.
Dhanvantri Nighantu.
Raja Nighantu.

* Telugu and Malayalam lists have since been received; they will be found towards the end of this appendix (G.S.—28-2-23.)

LIST OF PRINTED WORKS IN SAMSKRIT OTHER THAN THOSE USED AS TEXT-BOOKS—*cont.*

Nampumsaka Sanjivani with Hindi notes.
Nadi Darpana do.
Nadivignyana.
Nadipareeksha by Ravana.
Paribhashapradipa with Hindi.
Pathyapathyam do.
Pakapradipa Vajikarnam.
Palakapyam—Hastyayurveda.
Balatantram with Hindi.
Bala Chikitsa.
Balabodhapakavali.
Bopadeva Satakam with Hindi.
Do. with Gujrati.
Nidana Dipika.
Brihadpakavali with Hindi.
Brihan Nighantu Ratnakara with Hindi, 8 parts.
Bhavaprakasa.
Do. with Hindi.
Bhaishagyaratnavali with Commentary.
Do. with Hindi Commentary.
Madanapala Nighantu.
Do. with Hindi.
Madhava Nidana do.
Madhava Nidana with Malayalam.
Rogavinischaya.
Yoga Ratnakara.
Yogatarangini.
Yoga Chintamani with Hindi.
Rasamanjari do.
Rasaratnakara do.
Rasarajamohodaya do.
Rasaraja Sundara do.
Rasendra Chintamani.
Vajikarana Kalpadruma with Hindi.
Virasimhavaloka.
Brinda Madhava with Commentary.
Vaidya Kalpadruma with Hindi.
Vaidya Jivan do.
Vaidhyarahasyam do.
Do. with Hindi notes.
Vaidyamanotsava.
Vaidyaratna with Hindi.
Vaidya Sanjivani with Hindi.
Vaidya Sara Sankara with Hindi.
Do. with notes
Ashtanga Sangraha.
Sarirapushti Vidhanam with Hindi notes.
Sharangadhara Samhita.
Do. with Commentary.
Do. with Hindi Commentary.
Do. with Hindi notes.
Sharangadhara Samhita with Tamil notes.
Saligrama Nighantu.
Sarvavijayitantram.
Susruta Samhita Text with Hindi translations.
Do. with Dulhama's Commentary.
Do. with Harana Chandra Chakravarti's Sandipan Bhashya.
Do. with Chakrapani's Bhanumati.
Susruta with Sivadasa's Commentary.
Do. with Malayalam translations.
Stri Chikipasara with Hindi.
Haritakyadi Nighantu with Hindi.
Harita Samhita.
Do. with Hindi.
Ashtanga Sangraha with Commentary.
Vaidyamanorama.
Kshemakutuhala.
Rasayogasara.
Charaka Samhita with Sivadasa's Commentary.
Chikitsasara.
Dhanvantari.
Nighanturatnakara.
Brihadyogatarangini.
Rasa Chandamsu.
Rasayanasara.
Vaidyamrita.
Sidha Bheshajamanimala.
Satasloki.
Jivanuvada.
Hastyayurveda.
Aushadhi Nighantu.
Rasa Sankita.
Rasatilaka.
Nadivignyanatarangini.
Gunapatha.
Aswa Vaidya.
Bhaishajyaratnakara.
Sarvaushadhigunakalpam.
Dhanvantari Nighantu.
Aswavaidyam—In Telugu characters.
Sadvaidyajivan.
Pathyapathya Vinischaya.
Anupanamanjari in Telugu.
Sarirasastra Sangraha in Telugu.
Nadi Nakshatramala do.
Kakagnyanam do.
Stri Chikitsa.
Chikitsaratnam.
Ayurveda.

LIST OF MANUSCRIPTS IN AYURVEDA.

Tanjore Palace Library.

Bhedasamhita.
Ayurveda (in prose).
Ayurveda Mahodadhi, by Srisukha.
Arogyachintamani, by Damodara.
Sannipatha Chandrika.
Kalyanakaraka, by Ugradityacharya.
Vaidyavatamsa, by Lolimbaraja.
Satasloki Chandrakala, by Vopadeva.
Do. Bhavarthadipika, by Venidatta.
Yogasatakam, by Vararuchi.
Dhanvantari Saranidhi, by Vedavyasa.
Padartha Chandrika otherwise called Hemadritika or Ayurvedarasayan.
Roganirnaya.
Dhanvantarivilasa.
Chikitsamritasagara, by Pandita Devadasa.
Chikitsasarasangraha, by Vangasena, son of Gadadhara.
Sarasangraha.
Bheshajasarvaswam.
Kaupalikagrantha, by Kaupilaka.

LIST OF MANUSCRIPTS IN AYURVEDA—*cont.*

Tanjore Palace Library—cont.

Chintamani, by Vallabhendra, son of Bhatta Amareswara.
Chamatkara Chintamani.
Rajamriganka.
Saravali.
Pakavali.
Asiti Vatanidana.
Sleshmavaranidana.
Dohadaprakara (on pregnancy).
Kautuka Chintamani.
Mundikalpa.
Jyotishmatikalpa.
Vajikarana.
Purushartha Prabodha (on mineral drugs).
Kasyapasamhita.
Anandakanda.
Nagarjuniyam.
Umamaheswara samvadam.
Nadi Vignaniyam.
Abhidhana Chintamani.
Hridayadipika Nighantu.
Pathyapathyavibodha.
Gunapatha.
Dravyagunasatasloki.
Abhindhana Ratnamala.
Ashtangahridaya Nighantu.
Bhojanakutuhala, by Raghunathasuri.
Nalapaka Sastram.
Sarasangraha (otherwise called Sidhayoga Sarasangraha, Aswayurveda and Sarasindhu, by Durlabha, from the teachings of Solihotra muni).
Solihotronnaya.
Aswasastram.
Do. by Nakula.
Gajavaidya.
Gaja Chikitsa.
Gajasanti.
Gajalakshana.
Gajaprasamsa.
Hastyayurveda, by Palakapyamani.

Madras Oriental Manuscripts Library.

Akshiroganidana.
Aswavaidya.
Aswinisamhita.
Parahitasamihita (Ashtangakanda), by Nathapandita.
Ashtangahridaya tippana, by Asunapandita.
Ayurveda.
Aushadhavisesha.
Aushadharnava.
Kamaratnakara.
Kshayaroganidana.
Gunapatha.
Grahinikapata.
Charaka Panchikavyakhya.
Chikitsasara.
Charu Charya.
Jirnakalapramana.
Jyotishmatikalpa.
Jvaranidana.
Jvaraushadha.
Tapajwarasanti.
Dravyagunapatha.
Dravyaratnavali.
Dravyavaiseshika.
Nighanturaj, by Naraharipandita.
Nidana.
Nidanayagaratnavali.
Paryayamanjari.
Padaradasuddhi.
Padalepakriya.
Padalepanaushadha.
Bheshajakalpa.
Do. Vyakhya, by Venkatesa.
Do. Sarasangraha.
Bhojanatambulakrama.
Marmavibhaga.
Malayala Vaidya.
Mutrapariksha.
Rajata suvarna Karanakriya.
Rasanighantu.
Rasabhasmadi Vishaya.
Rasabheshajakalpa Dipika.
Rasaranjana (Satika).
Rasasahasrabodha.
Rasasarasamuchaya.
Rasarnava (Simhamahipala).
Roganidana.
Rogavastunidana (Satik).
Rogasantivivarana.
Vatanidava.
Vidyanusasana.
Visha Chikitsa.
Vishaharaushadha.
Vaidyagrantha.
Vaidya Chintamani.
Vaidya Nighantu (Satika).
Vaidyanidana.
Vaidyabheshajatarka (Savyakya).
Vaidyarajatantra (Satika).
Vaidyaprasamsa.
Vaidyasastra.
Vaidyasloka.
Vaidyasarasangraha.
Vaidyasarasangraha (Satika).
Vaidyamrita.
Sariraka (Bahata).
Do. Vyakhya.
Sarirakasutragunapatha.
Sisujwara Parihara Kriya.
Shadrasa Nighantu.
Sannipata Chandrika.
Sarvaroganidana.
Sarasangraha.
Sidhasarasangraha.
Sidhasarasamhita.
Sutradipika.
Hinguladighrita.
Ashtangahridaya Vyakhya.
Do. Pathya.
Do. Sahasrapadi.
Do. Hridayabodhini.
Do. Hridaya.
Do. Tamil meaning.
Visajyotsinika.
Lakshanamrita.
Chikitsagrantha.
Ayurvedatantra.
Chataslokijwara Chikitsa.

LIST OF MANUSCRIPTS IN AYURVEDA—*cont.*

Madras Oriental Manuscripts Library—cont.

Chikitsamanjari.
Matangalila.
Sannipata Lakshana.
Vasanta Chandrodaya.
Visavaidya.
Rasamanjari.
Yogasangraha.
Sahasrayoga.
Vaidyamanorama.
Vaidyagrantha.
Yogaratnasamucchaya.
Visanarayani.
Mridanitantra.
Rasankusa.
Rasahridaya.
Kanakamanjari.
Sadvaidyajivan Vyakhya.
Dravyadi Gunakara.
Abhinava Chintamani.
Suddhi Dipika.
Vaidyasarvasva.
Vaidyasara, by Nilakantha.
Visanarayaniya, with commentary.
Ashtangahridaya Vyakhyasara.
Rasayanatantra.
Upadesasarasamucchaya.
Rasarnava.
Santana Chikitsa.
Aswa Chikitsa.
Rasayanatarangini.
Vaidyarasamrita Sindhu.
Abhinava Chintamani Saratika.
Pathyapathya Vinisahaya Sangraha.
Sarasangraha.
Vaidya Kalpataru.
Ayurvedakalpataru.
Vaidyasara Sangraha.
Madhavanidana Vyakhya—Balabhodhini.
Vaidyahridayananda.
Saramala.

Bikaneer Library.

Ajirna manjari.
Do. Tika, by Baladeva.
Amrita manjari, by Kasinatha.
Anubhavasara.
Ascharyayogamala.
Do. Laghuvritti, by Swetambara Gunakara.
Aushadhi Kalpa.
Aushadhi prakara, by Krishna Bhatta.
Ayurvedakhanda, VI.
Ayurveda Rasayana.
Bala Chikista.
Bhairavaprasad.
Chakradatta Tika, by Nischala Kara.
Chikitsakalika.
Dhaturatnamala, by Aswinis.
Gunaratnakara, by Vrijabhushana.
Gutikaprakara.
Harita Sastram, by Harita.
Haya Sastra, by Nakula.
Hikmataprakasa, by Mahadeva Bhatta.
Hikmatapradipa, by Mahadeva Bhatta.
Do. by Vopadeva.
Jalabhedatika, by Kalyanaraya.
Jwara Timira Bhaskara, by Chamunda.
Jyotishmati Kalpa.
Kalagnyana Jwara Sannipata Chikitsa.
Do. Nadipariksha.
Do. Vishtamutrapariksha.
Kalpakhanda.
Kautuka Chintamani, by Maharaja Prataparudra Deva.
Lakshmanotsva, by Lakshmana.
Madanavinoda Nighantu.
Madhavachikitsa, by Madhavakara.
Madhavanidana Tippani.
Mallaprakasa, by Malladeva.
Mutranakhapariksha.
Netranjana, by Agnivesa.
Netrarogachikitsa.
Nidanapradipika (a gloss on Madhava Nidana), by Naganatha.
Padartha Chandrika.
Raja Simha Sudha Sindhu, by Mahadeva Pandita.
Rasanibandha.
Rasarajalakshami.
Rasaratnakara, by Susruta.
Rasavatara (another).
Rasoparasa Sodhanam.
Rayasimhotsava, by Rayasimha.
Salihotra, by Nakula.
Sangraharathnamala.
Sarasangraha, by Vyasa Ganapati.
Sarngadharatika.
Takrakalpa, by Parasara.
Tatwakanika, by Bharata Karna.
Todarananda.
Vaidyakutuhala, by Vamsidhara.
Vaidyakamanorama.
Vaidyak Saroddhara.
Vaidya Vallabhatika, by Meghabatta.
Visahara Mantraushadha.
Yantroddhara.
Yoga Chandrika.
Yoga Chintamani, by Harshakirti Suri.
Yogaratnasamucchaya Chandrika, by Chandrata.
Yogasatakatika, by Rupanarayana.
Yogatarangini, by Vimalla Bhatta.

Manuscripts in the India Office Library.

Chandrata (Susruta Vyakhya), by Chandrata.
Bhanumati (Susruta Vyakhya), by Chakrapani.
Rugvinischaya, with Vachaspati's Commentary.
Siddhanta Chintamani (Commentary on Madhavanidana).
Tatwa Chandrika (Commentary on Chakradatta Sangraha).
Siddhayogarnava, by Rajavilochana Dhanvantari.
Prayogaratnakara, by Kavi Kanthabaran.
Sukha-bodha, by Vaidyaraja.
Mugdha-bodha, by Madhava Kaviraj.
Sarakaumudi.
Yogasangraha, by Jagannatha.
Sarasangrahatarangini, by Sama Pant Vidvamsa.

List of Manuscripts in Ayurveda—*cont.*

Miscellaneous.

Chikitsa Ratnabharanam.
Chikitsa Rahasyam.
Todaranandah.
Vaidya Darpana.
Bhaishajyasaramrita Samhita Stree Vilasa.
Charakasamhita—with Jajata's Commentary (Chikithsa only).
Rasakankaleeyah.
Rasakaumudi (by Shaktivallabha).
Do. Jnyanachandra.
Rasagnyanam.
Rasa Deepika.
Rasa Paddhati.
Rasa Pradeepa.
Rasa Mukthavali.
Rasa Ratna Deepika.
Rasa Ratna Manimala.
Charkasamhita—Bhattaraharichandra Vyakhya (first three chapters).
Upakrama Mimamsa.
Sushruta—Commentary by Gayadasa (Shareer only).
Do. Commentary by Gayadasa (Nidana).
Do. Commentary by Jajjata (Sutrasthan only).
Nidana Pradeepa.
Tatwa Siddhi—Commentary on Siddhanta Nidanam.
Rasa Raja Sankara.
Rasayana Sangraha.
Rasavatara—Manikyachandra Jaina.
Do. Anonymous.
Rasendrakalpadruma.
Rasendramangalam.
Rasendraratnakosha.

The existence of the following is only a matter of inference at present; they are all quoted in authoritative commentaries now in use, but the originals have not yet been traced :—

Agnivesa Samhita.
Jatukarna Samhita.
Parasara Samhita.
Ksharapani Samhita.
Harita Samhita.
Kharanada Samhita.
Viswamitra Samhita.
Agasthya Samhita.
Atri Samhita.
Aupadhenava tantram.
Aurabhra tantram.
Paushkalavata tantram.
Vaitarana tantram.
Bhoja tantram.
Karaviraya tantram.
Gopurarakshita tantram.
Bhaluki tantram.
Kapila tantram.
Gautama tantram.
Videha tantram.
Nimi tantram.
Kankayana tantram.
Gargya tantram.
Galava tantram.
Sathyaki tantram.
Saunaka tantram.
Karala tantram.
Chakshushya tantram.
Krishnatreya tantram.
Jivaka tantram.
Parvataka tantram.
Baudhaka tantram.
Hiranyaksha tantram.
Kasyapa Samhita.
Alambayana Samhita.
Usana Samhita.
Sanaka Samhita.
Latyayana Samhita.
Patanjala tantram.
Vyadi tantram.
Vasishtha tantram.
Mandavya tantram.
Kakshapota tantram.
Arogya Manjari.
Kuchamara tantram.
Sarira Padmini.
Sarira Sastram.
Sarira Vaidyakam.
Charaka Vyakhyana by Jajjata.

List B—Siddha Works.

(List prepared by Maruthva Siromani Pandit Mr. C. S. Murugesa Mudaliyar, Member, Tamil Sub-Committee.)

Agastiar.

Name of the work in English.	Number of verses.	Whether printed or not.
Adukkunilai botham	10	Printed.
Andakkal Muppu	16	Do.
Adichaya Suttram	27	Do.
Anubhoga Suttram	..	..
Amurthakalai Gnanam	1,200	..
Ammai Sastram	82	..
Avushada Saram	60	Printed.
Ashtakarmayogam	..	..
Asvakandam	500	..
Ayul Vedam	1,200	Printed.
Do. Bashyam	—	..
Aurautharam	8	..
Chimutturatnasurukkam.	..	Printed.
Rasakkuligai	14	Do.
Do.	16	..
Rasamani-Suttram	14	..
Rasavadham	35	..
Ratnasurukkam	365	Printed.
Do.	242	..
Lakkasowmiyam — 10 cantos.	..	Printed.
Latchanakaviyam	1,000	Do.

LIST B—SIDDHA WORKS—*cont.*

Agastiar—cont.

Name of the work in English.	Number of verses.	Whether printed or not.
Utkarusuttram	..	
Upadesagnananam ..	51	
Ulokamaranam	150	
Uttumurai	24	Printed.
Emakandam	800	
Emathathuvan	800	
Etchani	800	
Karisal	300	Printed.*
,, Suttram	40	
Karukkadai	500	
Do.	300	
Do. Vadha Suttram.	12	
Do.	48	
Karunai Vakadam ..	8	Printed.
Karppakkole	48	Do.
Do.	26	Do.
Kalagnanam	120	
Do.	1,000	
Do. Suttram ..	1,200	
Do. Surukkam ..	12	
Do. do. ..	15	
Do. do. ..	30	
Karpam	500	
Karpamurai Suttram ..	10	
Kalangu	60	
Karmavipakam		
Karmakandam	300	Printed.
Do. Suttram ..	300	Do.
Do. do. ..	150	Do.
Kayasiddhi Valalai suttram.	40	
Karana suttram	48	Printed.
Kaviyam 1,000 Suttram to.	16	Do.
Do. Churkkam to ..	1	Do.
Do. do. ..	12	
Gunavakadam	..	Printed.
Gurujayanceer Gangai ..	60	Do.
Guru-Nadi	100	Do.
Do.	130	
Do.	235	Printed.
Guru Nul (Vaidyam) ..	600	
Do. (Muppu) ..	50	Printed.
Kurukkadai Suttram ..	36	
Do. ..	600	
Kulirchi Ennai	5	Printed.
Do.	5	Do.
Kuri-nul Suttram ..	12	Do.
Guru-Murai		
Kasari Vidhai	..	
Do. Guru-nul	56	Printed.
Gowmadhi	425	
Kovai Anadinamam ..	..	
Kovai	5	
Sagalakala Gnananam Lurukam.	120	
Do. Suttram ..	1,200	
Sanjeevi Ennai	5	Printed.
Sadatcharamaral ..	..	
Sathijalam	..	
Sarakku Suththi	100	
Do.	500	
Sowkaraththiravookole ..	16	
Shanmugajalam	..	

Name of the work in English.	Number of verses.	Whether printed or not.
Chaba-Nivarthi	8	Printed.
Sattram	208	
Do.	300	
Jalasuttram	500	
Jalathirattu (7 cantos) ..	1,200	
Do. (1st cantos).	300	
Jala Nikandu	200	Printed.
Do. do.	13	
Siddhadhi Ennai ..	8	Printed.
Chirushi Mano Sangee-tham.	16	
Sivakuligai	8	Printed.
Sivajalam	..	
Simiturathana Surukkam.	360	
Suddhagnanam	9	Printed.
Suddhimurai	30	
Suttra Nikandu	116	
Suttram	205	
Do.	300	
Do.	100	
Do.	50	Printed.
Do.	48	
Do.	30	Printed.
Do.	16	
Do.	14	Printed.
Do.	12	
Do.	12	Printed.
Do.	10	
Do.	10	
Do.	10	
Do.	9	Printed.
Do.	5	Do.
Do.	5	Do.
Do.	5	
Do.	8	
Do.	6	
Do. Kovai	16	
Sukshma-tharisanam ..	6	Printed.
Gnanam	100	
Do.	30	
Do.	30	Printed.
Do.	16	Do.
Do. (Upadesam) ..	14	Do.
Do.	13	
Do.	12	
Do.	10	
Do.	9	Printed.
Do.	8	Do.
Do.	6	Do.
Do.	2	
Gnana ula	..	
Do. Kakkisham	5	Printed.
Do. Kaviyam	1,000	Do.
Do. do. suttram.	..	
Do. do. do. ..	1	
Do. Churukkam ..	12	
Do. do. ..	16	
Do. Suttram	1,200	
Do. do.	18	
Do. Pujavidhi	16	
Do. Theekshai Churrukkam.	..	
Chenthuram	300	Printed.

* Not the one in manuscripts but some work in print under this name.

List B—Siddha Works—*cont.*

Agastiar—cont.

Name of the work in English.	Number of verses.	Whether printed or not.
Chenthuram 300—Suttram to.	36	Printed.
Do. do.	16	
Jodhimoni suttram ..	8	
Chwmiyasagaram ..	..	Printed.
Do. Churrukkam to.	..	
Thathvakaviyam ..	1,000	
Thandagam	..	
Do.	100	
Do. patchanignanam.	134	
Thirumantram	1,500	
Do.	8	
Theekshai padal ..	5	
Do. Nadi Suttram	..	
Do. Vidhi ..	200	Printed.
Thyla Surukkam ..	5	
Do. do. ..	100	Printed.
Thylam do. ..	500	
Thirunadana Suttram ..	48	
Nadana Kandam ..	350	
Do. Suttram ..	48	
Nanjumuruvu Vaippu ..	5	Printed.
Nayana Vidhi	500	
Navakiragha (and Sandhi)	32	
Navaloga Maranam ..	25	
Nasakandam	300	
Nadi	8,000	
Nadi-nul	88	
Do. nidhanam	32	
Nalukanda vaidyam ..	1,200	Printed.
Natakam	..	
Nikandu	200 116	
Neertinavagai	20	
Nēthramathrai	..	
Noyincharam	67	
Patchai	16	Printed.
Panjagam	..	
Panjakaviya nikandu ..	800	Printed.
Patchani	125	
Do.	300	
Padharthaguna Chintamoni.	..	
Paribhashai	300	
Do. 5 (kandams).	500	Printed.
Paripuranam	1,200	
Do.	400	
Do.	216	
Do.	205	
Do.	51	
Pallu	200	Printed.
Basmamurai	200	
Basmam	50	
Pandavaippu	600	Printed.
Balavakadam	1,200	Do.
Do.	350	
Do.	300	
Do.	200	
Do.	20	
Balagiraga dosham ..	8	
Balavasagam	207	
Pindorppathi	32	Printed.

Name of the work in English.	Number of verses.	Whether printed or not.
Pinnul	80	
Putpamalikai	51	
Purana-nul	100	
Purana kaviyam ..	1,000	Printed.
Do. Poojavidhi ..	..	
Do. Suttram	400	
Do. do.	100	
Do. do.	216	Printed.
Do. do.	205	
Do. do.	50	
Do. do.	16	
Do. Chandrothoyam.	200	
Purath-thurai	16	
Poojavidhi	200	
Do.	16	
Perunulvaidya kaviyam. Do. 4 kandam ..	1,500	Printed.
Perunul Kovai Surrukka Vaidyam.	272	
Perunthirattu	..	
Perunkulambu	16	
Maruthvabharatham ..	..	
Maghathiravagam ..	800	Printed.
Manakkolam	..	
Mathivenba	100	
Moni-Nalayiram	4,000	
Mantheregam	50	
Mantherega Kaviyam ..	1,000	Printed.
Do. Nikandu ..	..	
Munnul	80	
Muppu	50	
Do.	50	
Do.	50	
Do.	16	
Do.	16	
Do.	30	
Do. Ganthi Thylam ..	16	
Do. Suttram	350	
Do. Deekshai Suttram.	16	
Do. Vagaipadal ..	..	
Do. Suttram	16	
Do. Theekshai ..	40	
Mai-Surukka Suttram ..	51	
Mai-Gnanam	1,500	
Do.	1,000	
Do.	100	
Mekath Ennai	5	
Do.	14	
Yogam	6	
Do.	16	
Vakara Suttram	10	
Do.	10	
Do.	13	
Do.	30	
Vakara Mathivenba ..	100	
Valladhi	600	Printed.
Vazhalai	30	
Do.	30	
Do.	30	
Do.	..	
Do.	16	
Do. Surukkam	7	
Do. Suttram	..	

List B—Siddha Works—*cont.*

Name of the work in English.	Number of verses.	Whether printed or not.
Agastiar—cont.		
Vazhalai Suttram	12	
Vakadam	500	
Vakada Suttram	300	
Do. Nadi-murai.	1,500	
Vadha Suttram	12	
Do.	100	
Do.	200	
Do.	213	
Do. Surukkam.	6	
Vadham (2 cantos) ..	300	
Do.	200	
Do.	81	
Do. Kaviyam ..	1,000	Printed.
Do. Chowmiyan ..	1,200	Do.
Vanthibathi Vaidyam ..	10	
Valai Vakadam	..	
Do. Sastram	150	
Viyathi Kurippu ..	11	
Do. Varalaru ..	5	
Vishapirathi Visha Thirattu.	..	Printed.
Vishnu Chakkaram ..	2	
Virinun Muvlakaikandam.	..	
Venba	..	
Venkaramaluku	..	
Visuri Nul	82	
Vaidyam	16	
Do.	50	
Do.	100	
Do.	100	
Do.	205	
Do.	600	
Do.	150	
Do. Agarathi ..	..	Printed.
Do. Gurunul ..	600	
Do. do. ..	60	
Do. Kommi ..	..	
Do. Karukkadai ..	208	Printed.
Do. Sadhakam ..	..	Do.
Do. Kaviyam ..	1,000	Do.
Do. do. ..	1,500	
Do. Charam ..	41	
Do. Chintamani ..	4,000	
Do. Suttram ..	1,500	
Do.	1,200	
Do.	205	
Do.	300	
Do.	150	
Do.	100	
Do.	50	
Do.	48	
Do.	36	
Do.	16	
Do.	81	
Chinturam.		
Vaidya Chinturam ..	300	
Do. Nul	..	
Do. Pillaitamil ..	..	Printed.
Do. Marunthukal ..	..	
Do. Murai	..	
Do. Kannadi ..	..	
Do. Ratnakaram ..	..	

Name of the work in English.	Number of verses.	Whether printed or not.
Chinturam—cont.		
21,000	..	
10,000	..	
1,500	..	
1,200 Vakadam	..	Printed.
1,200 Suttram to ..	16	
1,200 Jayaneer suttram to	16	
1,200 First 1,000 ..	..	
225	..	
8	..	
5	..	
600 Suttram to	61	
Janakurkku Upadesetta Vaidyam. ..	600	Printed.
200 Suttram to	13	
150 do.	..	
225 do.	..	
120 do.	..	
67 do.	..	
60 do.	..	
36 do.	..	
Agappai Siddhar.		
Padal	..	Printed.
Vakara suttram	..	
Alukanni Siddhar.		
Padal	61	Printed.
Edaikkadar.		
Sareeram	..	
Padal	69	Printed.
Eartha Siddhar.		
Paripashai Nikandu ..	..	
Kaduvali Siddhar.		
Padal	35	Printed.
Kuthampai Siddhar.		
Padal	..	Printed.
Pompatti Siddhar.		
Padal	..	Printed.
Karugnanam	..	
Rama Devar.		
Karukkadai suttram ..	500	
Kesari	50	
Suttram	380	
Do.	333	
Do.	173	
Do.	81	
Do.	30	
Sivayogam	1,000	Printed.
Do.	200	Do.
Thandagam	100	
Nikandu	570 or 500	
Patchani	100	
Bashai	18	
Do.	18	
Pujavidhi	10	Printed.
Vinodhapatchani ..	108	
Vaidyam	1,500	Printed.
Do.	80	
Do.	1,000	
Yogam	200	

List B—Siddha Works—*cont.*

Name of the work in English.	Number of verses.	Whether printed or not.
Rama Devar—cont.		
Perunul	500	
Do.	300	
Rama Rishi.		
Ratna surukkam ..	362	
Karumana surukkam ..	51	Printed.
Karpa-murai	20	
Guru-nul	50	
Suttram	500	
Do.	100	Printed.
Do.	100	
Do.	50	
Do.	51	
Do.	50	
Do.	25	
Do.	25	
Do.	25	
Do.	20	
Do.	20	
Do.	19	
Do.	16	
Do.	16	
Gyanam	100	
Do.	16	
Thirumantram	16	Printed.
Mathanivanasurukkam ..	27	
Do. ..	16	
Muppusuttram	30	Printed.
Surukkam	16	
Vagarasuttram	27	Printed.
Do. ..	16	Do.
Paribashai	300	Do.
Vaidyam	500	Do.
Urvasi.		
Rasavadachitka (2 parts)	..	Printed.
Ratnasurukkam	..	
Pancharatnam	200	Printed.
Vaidyachitka	..	
Kadai Pillai.		
Amrutha Bodhakam ..	125	
Kamalamuni.		
Gyanasurukkam	5	
Vaidiyam	300	
Kowpala Siddhar.		
Anikkovai	51	
Karuvurar.		
Attamachittu	100	
Karukkadai Mi	30	
Santha Natakam ..	..	
Suttram	116	
Do.	16	
Gnanam	7	
Palathirattu	300	Printed.
Poojavidhi	30	Do.
Do. Valai ..	5	
Manthirkam	..	
Vadhakaviam	700	
Vaidya Nondi Natakam.	..	
Kalanginadhar.		
Kurunthirattu	..	
Perunthirattu	..	

Name of the work in English.	Number of verses.	Whether printed or not.
Kalanginadhar—cont.		
Suttram	36	
Do.	51	
Patchani and Salliya Mulam.	45	
Kalamegeswarar.		
Thampirasuthi	8	
Thampirasuttram ..	..	
Rasitham	8	
Kurmanandhar.		
Suttram	51	
Korakkar.		
Suttram Ashatakarmam	108	
Kalpanthanam	..	
Vaidyangam	..	
Kosigar.		
Agarasuttram	..	
Chinthamoni (1st and 2nd part).	..	
Kowpala Siddhar.		
Anikkorvai	55	Printed.
Konganar.		
Authisayasuttram ..	27	
Do. ..	50	
Iynnurthirattu	500	
Kurukkuligai	8	Printed.
Karppam	..	
Kandam first	500	Printed.
Do. middle	500	
Do. last	500	
Muthal Kanda Suttram	40	
Kadai Kanda Suttram	60	
Nadu Kanda Suttram ..	..	
Mukkanda Suttram ..	17	
Kalaigaanam	200	
Sathru Mithru	21	
Suthachaithanya Vedhanta Sastram.	16	
Gaanam	500	
Do.	300	
Do.	51	
Do. Kaviyam ..	..	
Do. Vedantam ..	107	
Do. in three cantos	..	
Thathvanul	..	
Thandagam	..	
Tharkanul	18	
Thirumantram	8	Printed.
Thekshavidhi Suttram ..	60	
Thekshai	60	
Thurusuguru	31	
Patchani	108	
Poojavidhi	15	Printed.
Do.	11	
Do.	31	
Mupputheekshai	40	
Muppu	4	
Vadha Kaviyam	3,000	Printed.
Valai Kommi	..	
Vedandam	107	
Vaidyasuttram	16	
Do.	800	

LIST B—SIDDHA WORKS—*cont.*

Name of the work in English.	Number of verses.	Whether printed or not.
Sattamune.		
Karpavidhi	100	Printed.
Sarakkuvaippu	..	
Suttram	200	
Do.	201	
Do.	52	Printed.
Do.	16	
Do.	10	
Do.	8	
Ganam Mūn	100	Printed.
Do. Pin	100	Do.
Do.	200	Do.
Do.	35	
Do.	3	
Tharkam	50	
Thirikandam	..	
Navaratnavaippu	..	
Nikantu	1,200	Printed.
Do. Suttram	53	
Purana do.	25	
Yogatheekshai	..	
Vadhakaviyam	1,000	
Theekshavidhi	200	
Sivanar.		
Ashtakarmam	..	
Sivavakkiar.		
Nadi-Parikshai	33	Printed.
Chokkanadhar.		
Suttram	..	
Damaranandhar.		
Suttram	16	
Pathanjali.		
Madhi-Venba	..	
Vadhasuttram	20	Printed.
Punnakkeesar.		
..	800	
Putharvannan.		
Shastram	17	
Sundaranandhar.		
Ashtakarmam	35	
Ayulvedapodhuvidhi	..	Printed.
Kesari	55	
Surukkam	500	
Suthavidhai	200	
Do.	100	
Suttram	25	
Do.	16	
Do.	6	
Thandagam	..	
Theekshavidhi	51	
Poojavidhi	37	Printed.
Manikandam	1,000	
Vinodha suttram	..	
Vedhai	1,050	
Vaidyathirattu	..	
Jeevaratnagaanam	100	
Ganam	51	
..	110	
..	25	

Name of the work in English.	Number of verses.	Whether printed or not.
Subbramaniyar.		
Ganam		
Do.	2,000	Printed.
Do.	500	Do.
Do. (Kalai)	500	
Do. (Upadesam).	200	Printed.
Do. (Suttram)	100	Do.
Do.	32	Do.
Sudhar.		
Vakkiyam	..	
Nadi	30	
Suttram	100	
Do.	110	
Rajanka-nadi	25	
Surianandhar.		
Suttram	13	
Thanvanthari.		
Karisal	..	
Kalaiganam	500	Printed.
Kaviyam (Vaidyam)	1,000	Do.
Do. (Ganam)	..	
Do. (Vadham)	800	
Gurunul	500	
Chimuttu Ratna Surukkam.	371	Printed.
Shukshma Vaidyam.		
Saineer	50	
Ganam	12	
Thandagam	100	
Thailam	500	Printed.
Nadi-nul	174	
Nikandu Karukkadai	300	Printed.
Muppu	40	
Vaidyam	1,500	
Do.	1,200	
Do.	200	
Do. (Chintamoni).	100	
Do. 143 Key to 1,200	..	
Do. 71 Suttram to 10,000	..	Printed.
Do. (Chintamoni).	10,000	
Dhakshnamurthi.		
Rasamoni	14	
Udarkuru Suttram	48	
Do. Murai.	30	
Kalaigyanam	1,200	
Do.	500	
Kaviyam	1,000	
Sayadarsanam	..	
Jalam 6 cantos	..	Printed.
Sowmia sagaram	1,500	
Do. jalathirattu	500	
Thirumantram	1,500	
Theekshai	..	
Patshani	110	Printed.
Paribashai	500	
Vakara Sowmia sagaram	500	
Vazhalai	30	
Do.	30	

LIST B—SIDDHA WORKS—*cont.*

Name of the work in English.	Number of verses.	Whether printed yet or not.
Tirumular.		
Ayuthavarka-nul	..	
Karukkadai	600	Printed.
Giranthi Ennai	8	Do.
Kuligai	50	
Gurumurai	..	
Sivayogadeekshai ..	215	
Sowmia sagaram ..	..	
Ganasurukkam	..	
Thambanakuligai ..	51	
Thandagam	..	
Thirumantram	3,000	
Deekshavidhi	215	
Navaratnachintamoni ..	..	Printed.
Nadhanthakurippu ..	11	Do.
Nadi-Anthadhi	53	Do.
Nikandu	300	
Vadhasuttram	300	
Vaidyam	600	Printed.
Do.	8,000	
Do.	3,000	
Do. (Karukkadai) ..	600	Printed.
Do.	120	
Do.	1,000	Printed.
Thiruvalluvar.		
Gnavetti	1,500	Printed.
Navaratnachintamoni ..	800	Do.
Pancharatnam	500	
Navaratna surukkam ..	300	
....	100	
....	50	
Pari Muppu	30	Printed.
....	26	
....	16	Printed.
Pancharatnam	11	Do.
Nadanda Thiravukole ..	9	Do.
Theyraiyar.		
Sigamoni Venba ..	..	
Nikandu	..	
Sagarappa	..	
Kappiam	..	
Tharu	..	
Natakam	..	
Natakam with commentary.		
Anthathi-Yamugam ..	..	
Mega-Vannam	..	
Nanmalai	..	
Yamuga Venba	..	Printed.
Do. with notes and commentary.		Do.
Ethugaipa	..	
Karisal	..	Printed.
Mahagunapadam	..	Printed partly with commentary.
Thinakkramalankaram ..	..	
Piradhanagunamuli Tharu	..	
Chigichaikkramam	..	
Vaidaya Pallu-Natakam.	..	

Name of the work in English.	Number of verses.	Whether printed yet or not.
Theyraiyar—cont.		
Maruthubharatham ..	..	Printed.
Neer-kuri	..	Do.
Nai-Kuri	..	Do.
Thylavarga surukkam ..	..	Do.
Nōi-marunthalavai ..	..	
Ennalalavai	..	
Of above namesake.		
Vaidyam	500	Printed.
Do.	1,000	Do.
Do.	1,500	Do.
Do.	100	Do.
Do.	300	
Do. (Petty works) ..	200	
Nandeesar.		
Purana chaitya Vaidyam.	1,200	
Suttram to above 1,200.	500	
Do. do.	200	
Do. to 200 ..	100	
Do. to 100 ..	50	
Purva-muppu-suttram ..	12	
Poojavidhi	12	Printed.
Madhisaippa	100	
Muppranavasuttram ..	37	Printed.
Vazhalai	33	
Vadhasuttram	30	
Vaidyasuttram	200	
Do. to 200 ..	50	
Do. to 50 ..	30	
Do. to 50 ..	25	
Do. to 25 ..	16	
Do.	100	
Do. Thiruvaranam.	50	
Do. do.	68	
Neertinakkuru	130	
Vaidya suttram	32	Printed.
Do.	1,200	
Do.	1,000	
Do.	600	
Udhichayam (Osai Nikandu).	300	
Udhichayam Suttram to 300.	100	
Udhichayam Suttram to 100.	50	
Udhichayam Suttram to 50.	36	
Udhichayam Suttram to 36.	25	
Udhichayam Suttram to Vadhamuli 25 Thiravagam.	15	
Udhichayam to Udichayam Suttram 15.	12	
Udhichayam Suttram to 12.	8	
Udhichayam Suttram to 8.	5	
Udhayathethaham (Udichaya Suttram).	100	
Karachaippa	500	
Do. Venba ..	100	
Karukkadai	300	Printed.
Kalaiganam	1,000	Do.

LIST B—SIDDHA WORKS—*cont.*

Name of the work in English.	Number of verses.	Whether printed yet or not.
Nandeesar—cont.		
Kaithalasuttram	5	
Do. ..	8	
Sagalavishakuligai ..	8	Printed.
Suttram	100	
Ganam	100	Printed.
Thathva-nadi	..	
Thandagam	..	
Thiravagam	11	Printed.
Nadi	90	
Nikandu	300	
Neelakandavalai Suttram	100	
Padal	8	
Pranava Suttram ..	12	Printed.
Do. Suttram ..	15 or 16	Do.
Do. Nul Mula-Nikandu.	300	
Pranavam	50	
Do.	12	
Nakkeera Nayanar.		
Muppu Chunnam ..	29	
Pulathiar.		
Vadhasuttram	300	Printed.
Ganakarpam	222	Do.
Pulippani.		
Chimishvidhai	..	
Jalam	300	Printed.
Palathirattu	..	Do.
Vaidyam	500	Do.
Karpa-murai	70	Do.
Chidambaram	25	
Birhma Muni.		
Karukkadai	380	Printed.
Suttram	386	
Do.	385	
Do.	360	
Perunul in 3 cantos ..	..	
Visham and Paduvan (Medicines for).	23	
Vaidyam	800	
Do.	700	Printed.
Do.	100	
Do.	56	
Bogar.		
Ashtakarmayogam ..	..	
Uparasa Nikandu ..	..	
Uloka nidhi	16	
Karukkadai	500	
Karpam	340	
Do.	700	
Karachunnam	..	
Chikichai Venba	..	
Sarakku Vaippu	800	Printed.
Sudalaisuttram	6	Do.
Suttram	8	
Vaidyasuttram (Pillai Thosham).	16	
Vaidyasuttram	16	
Jananasagaram	557	Printed.
Ganam	100	Do.
Parangi Pashana Vaippu .	8	Do.

Name of the work in English.	Number of verses.	Whether printed yet or not.
Bogar—cont.		
Poojavidhi	44	Printed.
Nikandu	1,200	Do.
Do. Suttra Surukkam.	62	
Nāttira Roga Thylam ..	9	Printed.
Venba	..	
Vedhanda Suttram ..	8	
Kandam	7,000	Printed.
Do. Suttram ..	700	Do.
Padal	700	
Vaidyam	700	Printed.
Vada Suttram	4	
Macha Muni.		
Gunavakadam	20	
Guru Muthrai	5	
Sanni Kiyazham ..	8	Printed.
Sarakku Vaippu	800	
Jalakandam	800	
Do.	30	
Suttram	11	Printed.
Suttra Vidhi	..	
Sulai Marunthu	223	
Jana Nul	20	
Ganam (3 cantos) ..	..	
Thiravagam	800	
Thirumantram	300	
Vellai	300	
Nadhandha Saram ..	152	
Nikandu	105	
Nūl	150	
Perunūl Kaviyam ..	800	Printed.
Do. Suttram.	7	Do.
Do. do.	8	Do.
Do. Pirivu ..	800	
Vadha Kandam ..	300	
Isthula Kandam	..	
....	1,330	
....	360	
Ula	1,000	
Do.	1,700	
Karisal	..	
Do.	36	Printed.
Kal-nandu	..	
Kommi	1,133	
Do.	300	
Surukkam	100	Printed.
Chigichai	500	
Do. Sara Sangragham.	..	Printed.
Chintamoni Nidhanam Medicine.	800	Do.
Do.	400	
Suttram	100	
Nadi-Nidhana Chintāmoni.	..	
Paripuranam	400	
Puranam	100	Printed.
Perunūl Vaidya Kaviam.	1,000	Do.
Madhi Venba	120	Do.
Vadha Kandam Muthal (1st).	1,000	Do.
Vadha Kandam Errandu (2nd).	1,000	Do.

List B—Siddha Works—*cont.*

Name of the work in English.	Number of verses.	Whether printed yet or not.
Yugi Muni.		
Vadha Kandam Munru (3rd).	162	
Vadha Kandam (5th) ..	217	
Vadha Kandam (6th) ..	171	
Vadham	708	
Vadhanga Deeksha Vidhi.	302	Printed.
Vadha Chintāmoni ..	239	
Vadha Vaidya Vilakkam.	199	Printed.
....	1,200	Do.
....	435	
....	200	
....	200	
....	100	
Mula Guru.		
Surukkam		
Yacob.		
Work	760	

Name of the work in English.	Number of verses.	Whether printed yet or not.
Valmekar.		
Nadi	100	
Suththa Ganam	16	
Do.	11	
....	100	
Viyakkramapadhar.		
Ganasuttram	300	
Veerama Muni.		
Vagada Thirattu, first part.	..	Printed.
Vagada Thirattu, second part.	..	Do.
Nasa Kandam	100	
Shaik Marith.		
Kakkisham	30	
Viyasar.		
Vaidyam	..	

Miscellaneous works—whose authors are not known (or clearly known).

Uzhikkarthu Suttram.
Ettiya Nūl.
Oushada Vivaranam.
Do. Muraigal.
Kodungkodasuri.
Sarasankiraga Nikandu.
Sura Shastram.
Siddhararudam.
Thanavagadam.
Thyla Muraigal.
Nakshatra Malai.
Nadi Sastrum.
Nasigasuranam.
Nidhi Nisshaba Vivaranam.
Neelakanda Valai Suttram.
Do. Shastram.
Pambu Murunthugal.
Bala Vaidyam.
Bala Raksha Vidhi.
Bethi Thylam.
Vagada Sura Nūl.
Vaidya Shastram.
Do. Virudhu Nūl Tharkam

Sanskrit works in Tamil (all in print).

Ashtangahirudayam (Sareerasthanam).
Sarangadharar.
Vakbhattam.
Jeevarakshamirtham.

Latest works by Vaidyas other than Siddhas, etc. (all in print).

Anuboga Vaidya Navaneetham (in 10 parts).
Do. Brahma Rahasiam.
Anatomy, etc.
Abhyasa Chakkram.
Asvasastram.
Athma Rakshamirtham.
Asavarishtam.
Adi Samoodrigam.
Ayulvedha—Surukkam.
Do. Siromoni.
Do. Kalanjiam.
Do. Chikichasara Sangraham.
Do. Paravaram.
Arokiadeepavachanam.
Rana Vaidyam.
Do. Chintamani.
India Samayal Sastram.
Hindu Kudumba Vaidya Chintamani.
Do. Bala Vaidyam.
Rana Vaidya Chintamoni.
Raja Vaidya Bodhini.
Rasavadha Chintamani in 2 parts.
Do. Manjeri.
English and Tamil:—
Materia Medica.
Vaidya Chintamoni.
Do. Sangragam.
Gangadariam.
Kadukkaiprabhava Bodhini.
Kannusawmiyam.
Karuppa Sastram.
Kaviraja Segaram (2 parts).
Kalnadai Viyadi Kurippu.
Kudumba Savarakshani.
Kaimurai Vaidyam.
Saguna Sastram.
Sara Nūl.
Sarabhendra Kapha Marunthu Manjeri.
Do. Meka Nivarana Bodhini.
Sareera Sastram.
Sarva Visha Murippu.
Chikicha Sara Sangragam.
Do. Ratna Deepam.
Chisu Vurpatti Chintamani.
Siddhar Ragasiam.
Siravaga Nivrana Bodhini.

LATEST WORKS BY VAIDYAS OTHER THAN SIDDHAS, ETC. (ALL IN PRINT)—*cont.*

Seroratna Vaidya Bhushanam.
Do. do. Natanakandam.
Swedesa Vaidiya Ratnam.
Saivapaka Sastram.
Gnanasiddha Swamigal Thapodanam.
Niyaya Ashtanga Dheepam.
Tharkala Vaidya Bodhini.
Tirinetra Chintamoni.
Degathathva Sastram.
Nalaveemapakam.
Nadi, Jwara and Janni Chintamoni.
Nan Vasikkum Vinodha Maligai, etc.
Noiyatra Vazhvu.
Noiyilla do.
Paribashai Agarathi.
Do. Vellipadai Agarathi.
Parimala Sastram.
Bagha do.
Baryasugha Bodhini.
Bala Vakadam.
Bala Vaidiya Bodhini.
Parvathiparaniyam.
Prameka Nevarani Bodhini.
Plague Chikicha do.
Purusha Stri Samutrigam.
Baishadha Kalpam.
Moni Mantra Vaidya Sekaram.
Maruthuva Sastra Surukkam.
Do. Sastram.
Marma Sastra Darma Bodhini.
Mano Vasiya Thathvam.
Malai Agarathi.
Manida Ragasiyam.
Do. Marma Sastram.
Do. Jeevia Chintamoni.
Mattu Vakadam.
Muligai Marmam (4 parts).
Muligai Jala Ratnam.
Mularoga Chikichai Bodhini.
Mesmerism.
Materia Medica.
Unani—
Anuboga Vaidyam.
Chikichachara Sangragam :—
(1) Seroroga Nivarnam.
(2) Nayaroga Nivaranam.
Sukshma Chikicha Bodhini.
Pathartha Guna Villakkam.
Do. Sara Sangragam.
Vaidya Tharutya Virdhi Bodhini.
Do. do. key.
Roga Nirnaya Saram.
Varna Vaidiya Shastram.
Vanthi-bethi Nivarani.
Viyathi-Mulam.
Visha-bethi Nivarani.
Visha-pradhi Vishathirattu.
Visha-bethi-roga Nivarthi.
Vaidya Aresuvadi (2 parts).
Do. Anukula Jeevarakshani.
Do. Amrutha Bodhini.
Do. Kommi.
Do. Kural 108.
Do. Kai Murai.
Do. Saththagarathi.
Do. Santhana Chintamoni.
Do. Sara Sangragam.
Do. Thirattu.
Do. Thiruppukazh.
Do. Thiravukole.
Do. Raja Chintamoni (2 parts).
Jeevajeevaguna Vilakkam.
Jeevorpatti Chintamoni.

LIST OF TELUGU AYURVEDIC WORKS.

List prepared by Dr. A. Lakshmipathi, B.A., M.B. & C.M.

Number.	Name of book.		
	(a) Oriental Library.		
1	Ashtangahridaya with Telugu meanings.		
1	Vaidya Cintamani	do.	do.
1	Aushadhayoga Grantha	do.	do.
1	Gadasanjeevadi	do.	do.
1	Cikitsa Grantha	do.	do.
1	Cikitsa Granthasara	do.	do.
1	Cikitsa Vishaya	do.	do.
1	Cikitsasarasangraha	do.	do.
1	Trilokya Cintamani-rasanirupana	do.	do.
1	Dattatreyamata	do.	do.
1	Dehatatwa Nirnaya	do.	do.
1	Nadipariksha	do.	do.
1	Nadivignana	do.	do.
1	Nadisastra Sangraha	do.	Commentary.
1	Nanavidhoushadhakalpa	do.	meanings.
1	Nidanagrandha	do.	do.
1	Nidanayogaratnavali	do.	do.
1	Balagraha Cikitsa	do.	do.
1	Narasimha Nidana in Telugu characters.		

Number.	Name of book.		
	(a) Oriental Library—cont.		
1	Bahata Grantha with Telugu meanings (Gauriputra Kartikeya Vrachitam).		
1	Bheshaya Kalpa with Telugu meanings.		
1	Madanakamaratna	do.	do.
1	Madhavanidana (Rasayogadi)	do.	do.
1	Raktapithadinidana Chikitsa	do.	do.
1	Rasakachchaputa	do.	do.
1	Rasaratnakara	do.	do.
1	Roganischaya (Sannas Madava Nidanam).	do.	do.
1	Vaidyagrantha with	do.	do.
1	Vaidyayogasangraha	do.	do.
1	Vaidya Visaya	do.	do.
1	Vaidyavisaya Grantha	do.	do.
1	Sariram	do.	do.
1	Sakalaroga Chikitsa Sangraha with Telugu meanings.		
1	Sadvaidyajeevana	do.	do.
1	Saraswata Ghritadi Yoga	do.	do.

LIST OF TELUGU AYURVEDIC WORKS—*cont.*

Number.	Name of book.
	Materia Medica.
1	Ashtanganighantu with Telugu meanings.
1	Abhidhanaratnamala do. do.
1	Abhidhana Choodamani (Telugu).
1	Dravyagunapattha with Telugu meanings.
1	Dravyanischayasara sangraha do. do.
1	Dhanvantari Niganutu do. do.
1	Pathya Pathyavarga do. do.
1	Vastugunakalpavalli do. do.
1	Vastugunanirnaya do. do.
1	Vaidyanighantu do. do.
1	Sata Sloki do. do.
1	Haritaki Bheda do. do.
	Medicine supplement.
1	Ayurveda with Telugu meanings.
1	Jeernakala Pramana do. do.
1	Nidana Visaya do. do.
1	Basavarajeeya do. do.
1	Rasadiyoga Grantha do. do.
1	Vishavaidya do. do.
1	Vaidya Sastra do. do.
1	Satayogagrantha do. do.
1	Sindura Vishaya do. do.
1	Siddhomantra (Kesadeva in Samskrit commentary Oopadeva Virachitam).
1	Paradayoga Sastram in Telugu lipi.
1	Yakshmaroganidana do. do.
1	Ratnakaranshadhayoga Grantha do.
1	Rasa Kanmudi, Nagari lipi. (Sarvajna Chandra Virachitam)
1	Siddhayoga (printed edition) Telugu.
1	Gunapattha do.
1	Dakshanamurthi Nighantu do.
1	Dravya Viseshikam in Telugu.
1	Ashtanga Hridaya Soothrasthana, 15th Adhyaya, Telugu.
1	Aushadayoga Grantha with Telugu meanings.
1	Nadi Vignanam with Telugu meanings.
1	Vaidya Grantha with do.
1	Vaidya Chintamani with Telugu meanings (Yellubhatta Virachitam).
1	Vaidyavishaya with Telugu meanings.
	Miscellaneous Series.
1	Ayurvedartha Sangraha.
1	Rasapradeepa.
2	Rasarnava.
1	Susruta Samhita Tika with Text.
1	Vaidya Chintamani Tika with Text.
1	Do. Sastra.
1	Do. Vishaya.
1	Yoga Sangraha.
1	Annamulagunamulanurivarivelu Granthamu.
1	Arasarōganidānam.
1	Aswachikitsa Vishayaka Grantha.

Number.	Name of book.
	Miscellaneous Series—cont.
1	Andhra Chintamani.
1	Ayurvedōpadesam.
1	Aushada Grantham.
1	Do. Yoga Grantham.
1	Do. Vivarana Granthamulu.
1	Do. Vivarnamulu.
1	Kadupunoppi Vaidyam.
1	Kātuka Cheyu Paddhati.
1	Kanta Pariksha.
1	Garbinisoola Chikitsa Vivarana Granthamu.
1	Gunapātthamu.
1	Chikitsalanuvivaruchu Granthamu.
1	Chikitsasarasangrahamu.
1	Chintamani.
1	Thrilokya Chintamani.
1	Dootadhyayam.
1	Dravyanischayasarasangraham.
1	Dwimoorthy Rasamu.
1	Dhanvantari Chikitsasārasangraham.
1	Navanadha Soodhipradeepika.
1	Do. Siddhapradheepika.
1	Do. Siddhasramu.
1	Navapāshāna Soodhula Delupu Granthamu.
1	Nidānamooktāvali.
1	Nidānayogaratnāvali.
1	Padārdhaguna Chintamani.
1	Poorna Chendrodayamu Modalagu Aushadhamulanu Cheyureethini Telugu Granthamu.
1	Pravala Bashma, Thambra Bhasmadulamu Vivarinelu Grantham.
1	Basavarājeeyamu.
1	Bāhelamu.
1	Bhasma Thailādiyōga Grantham.
1	Bhishak Sāramu.
1	Bheshaja Kalpamu.
1	Madanakāmaratnamu Satikamu.
1	Rakta Pittha Nidāna Chikitsa.
1	Rasapradipika.
1	Rasaratnākaramu Satikamu.
1	Rōganidhānamu do.
1	Vāta Rakshasamu.
1	Visha Chikitsa Satikamu.
1	Veeryavridhibodhini.
1	Vrishabharajeeyamu Satikamu.
1	Vaidya Granthamu.
1	Do. do. Satikamu.
1	Do. Chintamani.
1	Do. do. Satikamu.
1	Do. Darpanamu do.
1	Do. Sastramu.
1	Do. do. Satikamu.
1	Do. Saramu.
1	Do. Hasyamu.
1	Satasloki.
1	Sataslok Satikamu.
1	Sooladi Vyadhi Chikitsa.
1	Sakalaroga Chikitsa Satikamu.
1	Siddanshadha Kriyalu.

LIST OF TELUGU AYURVEDIC WORKS—*cont.*

Number.	Name of book.
	Miscellaneous Series—cont.
1	Sadvaidyajeevani Satikamu.
1	Saraswata Ghritamu do.
1	Soothrasthanamu do.
	Telugu Academy.
1	Ayurvedamu.
1	Karmavipakamu (Dhennunkonda Narasiah).
1	Gunapatthamu.
2	Bhootha Vaidyamu.
2	Bheshaja Kalpamu (Venkatesakavi).
2	Rasapradipika (Moodumby Narasimhacharyulu).
2	Vaidya grandhamu.
2	Vaidya Chintamani (Vallabhandrudu).
1	Vaidya Padyamulu (Mantriyappa).
2	Vaidya Poostakamu.
1	Vaidya Vachanamu.
2	Vaidya Sastramu.
1	Do. Yoga Bhagamu.
1	Satasloki.
2	Sarabharajeeyamu.
	Tulluri Sarabharaju.
	Vignana Chendrika Mandali, Madras.
2	Vaidya Chintamani.
1	Basavarajeeyamu.
1	Ashtanga Hridayamu (Vagbhata Sootra Sthanamu).
1	Ashtanga Hridayamu Chikitsa Sathanamu.
1	Aswa Vaidya Sastramu.
1	Anupanamanjari.
1	Anupanaratnakaramu.
1	Anupana Tharangini.
1	Sadvaidyajeevanamu (Lolambarajeeyamu).
1	Chikitsaratnamu.
1	Chikitsa Saramu.
1	Susruthamu (Sarirasthanamu Pracheenamu).
1	Sarngadhara Samhita.
1	Vaidyamrithamu.
1	Sarvoushadhi Gunakalpamu.
1	Vajikarana Kalpadrumamu.
1	Kala Janamu.
1	Dhanvantari Nighantuvu.
1	Gunapatthamu.
1	Nadi Nakshatramala.
1	Nadi Janamu.
	Manual of Botany.
	Malaria by Dr. A. Lakshmipathi.
	Cholera do.
	Infectious Diseases do.
1	Manavadharma Chandrika.
1	Bruhadvaidaratnakaramu.
1	Vastugunaratnakaramu.
1	Anupanaratnakaramu.
1	Kalaganamu.
1	Chikitsaratnamu.
1	Dhanvantari Nighantuvu.
1	Nadee Nakshatramala Nadeenirnayamu.
1	Vajeekaranakalpamayamu.

Number.	Name of book.
	Manual of Botany—cont.
1	Vaidyamrithamu.
2	Vaidyachintamani.
1	Basavarajeeyamu.
1	Chikitsasaramu.
1	Sadvaidyajeevanamu.
1	Nadeegnanamu.
1	Sarvoushadhi Gunakalpamu.
1	Sarngadharasamhita.
1	Ghrita Taragamu.
	Madras Ayurvedic College.
1	Ashtaggahridaya Sootramu (Poorvabhagamu).
1	Ashtangahridaya Sootramu (Utharabhagamu).
1	Vaidyachintamani.
1	Bhishajyaratnavali (Savyakhya).
1	Yogaratnakaramu.
1	Vaidya Kalpadrumama.
1	Ashtangasangrahamularmu.
1	Do. Sarvāngasundari Vyakhya.
1	Doctoria Chikitsahranavam.
1	Charaka Chakrapani Vyakhya.
1	Soothra Ithāna.
1	Nidāna.
1	Vimana.
1	Sareera.
1	Indriya.
1	Rasaratnasamutchayam (Moolam).
1	Susruthamu Sabhashyamu.
1	Brunda Madhava Siddha Yógam.
1	Do. Srikantha Datta Vyakhya Hastayurveda.
1	Chikitsakrama Kalpavalli.
1	Susruta Hindi Tika.
1	Vanoushadi Darpanam, Vol. I.
1	Do. Vol. II.
1	Thibi Akbar.
1	Bruhannighanlu Ratnakaram.
1	Anjana Nidanamu.
1	Ajirnamanjari.
1	Pākāvali.
1	Ayurveda Vigana.
1	Harita Samhitā.
1	Aswavaidya.
1	Susruta Sariram Telugu Tika.
1	Charaka Gandhadhara **Vyakhya.**
2	Susruta Dalhana Vyakhya, Vols. I & II.
1	Madhava Nidānam Charaka Datta Moolam Sanyakhyanam.
2	Bhāvaprakasika, Vols. I & II.
1	Basavarājuyamu.
1	Sārngadhara Samhita Vyakhyana Sahitam.
1	Rasarnamamu.
1	Bhārata Varsheeya Vanoushadhi Sangraham.
1	Bharata Varshiya Vanoushadi Sangraham.
1	Abhidhana Nighantu.
2	Aswa Vaidya Sala (Raja Sri Bomadevara Narasimha Naika).
1	Savyakhya Vaidya Jeevanam Lolambarajeeyamu.
1	Hamsaraja Nidanam.

List of Telugu Ayurvedic Works—*cont.*

Number.	Name of book.
	Madras Ayurvedic College—cont.
1	Madava Nidanam Telugu Tika.
1	Yoga Tharangini.
1	Dillagana.
1	Angleya Vaidya Chintamani.
1	Chikitsa Sara.
1	Kamaratnamu.
1	Kalikalpalatha.
1	Madava Nidanamu.
1	Madukosavyakhya.
1	Nidana Deepika.
2	Rasaraja Mahodhadi, Vols. I & II.
1	Anubhava Vaidya.
1	Vrishakalpa Drumamu.
1	Chikitsa Saramu.
1	Rasendrasara Sangrahamu.
1	Rasaratnakara Rasendra Chintamani.
1	Charaka Chikitsa Siddhikalpa.
1	Sarngadhara Samhita Telugu Tika.
1	Aushadhi Kalpalatha Gunapatthamu.
1	Vaidya Shadrasa Nighantu (Gunabhushanamu).
1	Vaidyanighantu Mahaparijathamu.
1	Angleyoushadhaguna Deepika.
1	Shadrasa Nighantu / Sree Nighantu} Siromani, Vol. I.
	Do. ,, Vol. II.
1	Bruhannighantu.
2	Vanoushadi Viganam.
1	Rajavallabha Nighantu.
1	Madanapala Nighantu.
1	Raja Nighantu.
2	Vastugunadeepika.
1	Vaidyasabdakalpadrumam.
1	Vaidya Bodhini.
1	Nadiviganamu.
1	Vishavachika Roga Samani.
1	Nethra Darpanam.
1	Vishoochijadya Chikitsa.
1	Plague Jadya Chikitsa.
4	Marikaroganivarani.
1	Dhanvantari Vijaya.
1	Bhyshajyaratnavali.
1	Bheshaja Kalpa.
2	Madhumehanidana.
1	Mahamarica Vivechana.
2	Ajakalaka Veeryanasa.
1	Vaidya Vallabhamu.
1	Visha Chikitsa Darpanam.
1	Balathanthramu.
1	Dhanvantari Raksha.
1	Gourikanjali Thanthram.
1	Sushena Vaidyam.
1	Anupana Darpanam.
1	Vaidya Jeevanamu (Cannada Tika).
1	Pathyapathyamu.
1	Anupanamanjari.
1	Vaidyaka Paribhasha.
1	Vaidyanukula Kutumbajeevarakshana.
1	Kanmudika Nighantu.
1	Sarirapushti Vidhanamu.
1	Ashtanga Nighantu.
1	Vaidyamritam.
1	Ghritatarangamu.
1	Vyasaprokta Vaidyasastram.
	Madras Ayurvedic College—cont.
1	Jeevarakshamrithamu.
1	Gurusishyasamvada Vaidya Chintamani.
1	Aswadi Chikitsa Saramu.
1	Swara Chintamani.
1	Satasloki.
1	Vaidyasara Sangraham.
1	Kumara Thanthramu.
1	Pulippani Vaidyarahasyamu.
1	Nadee Nakshatramala.
1	Kata Ganamu.
1	Vaidyabalabodha.
1	Vrikshayurvedamu.
1	Napumsaka Sanjeevani.
1	Garbhinee Sishurakshani.
1	Karna Vaidya Sastramu.
1	Sahadevapasusastramu.
1	Prathyaksha Sariramu.
1	Kamasoothra Vyakhya.
1	Susruta Sarira Bhashya.
1	Charaka Samhita Gangadhara Vyakhya Sahita Soothrasthanamu.
1	Do. Nidana Vimana Sthanamulu.
1	Ashtangahridaya Soothra Kalpa Sthanamulu.
1	Hemadri Vyakhya.
1	Chikitsa Padhati Vaidya Granthamu.
1	Vaidyagrantharathnamu Cheerukkamuni Dravidi Lipi.
1	Vaidya Chintamani Telugu Tika.
1	Aushadha Yogalu Thrilokya Chintamani Vajairata Vyakhyanam.
1	Ayurveda SutraVaidyagrandha Chikitsa.
1	Ratnakaraprakaranam.
1	Agastyar Poorna Kavyam Vaidyam.
1	Aushadhaprakriyaloo.
1	Ashtanga Hridaya Deepika Suthra Nidana Sthanaloo.
1	Basavarajeeyam Yogaprakaranam.
1	Vastuguna Deepika (Mallari Mahatmyam).
1	Vimsati Meha Nidanam.
1	Ayurveda Suthra 3 Pannaloo (Andhra Lipi).
1	Vaidya Nighantuvu and Vaidyachintamani.
1	Shadrasa Nighantu.
1	Thaitadi Yōgamulu Telugu Tika.
1	Chikitsasarasangrahamu.
1	Bheshajakalpamu.
1	Ashtangahridaya Vyakhya.
1	Dhanvantaryadi Thailayogamu.
1	Siddhayogamanjari.
1	Yoga Ratnakaram Vaidyam.
1	Chikitsayoga Lipi Andhram.
1	Lalitha Thrisathee Bhashya.
1	Daivithyā Garbhinee Chikitsa.
1	Yogāthi Vaidyagrantham (Yogaprakaranam).
1	Dhanvantari Nighantuvu.
1	Chikitsa Chandrika (Andhra Lipi).
1	Vivekasindhu (Gooty Subba Rao gift).
1	Sāstra Darsani (Nidāna Chikitsa).
1	Kasyapa Vaidyam.
1	Chikitsa Sangraha.

List of Telugu Ayurvedic Works—*cont.*

Number.	Name of book.
	Madras Ayurvedic College—cont.
1	Yōga Sangraham.
1	Garbhini Chikītsa (Dravida Lipi).
1	Shadrasa Nighantu (A. Narasimhacharlu gift).
1	Shadrasa Nighantu (Rangacharlu gift).
1	Aruna Bhashya Karmavipaka (Visweswarabhatta Virachitam).
	Lavanagunadi Ennai (Dravida Lipi).
1	Charaka Vyakhyanam (Panchika).
1	Bheshaja Kalpa.
1	Kasyapa Samhita.
1	Yōga Satakam.
1	Bheshaja Tarkam. Vols. I, II and III.
1	Kalyanakarakam. Do. I and II.
1	Rasarnavam.
1	Rasabheshaja Kalpa Deepika.
1	Dravyaratnavali.
1	Akaradi Nighantu (Akakshora Nighantu).
1	Navanadha Sidda Deepika.
1	Nādeethanthram.
1	Ayurvedasaram.
1	Ayurveda Rasayanam Vyakhyanam (Hemadri).
1	Ashtanga Hridaya Sariram.
1	Korumka Nighantu.
1	Rasasiddanta Sasanam.
1	Bheshajakalpa Vyakhyanam.
1	Bheshajakalpam.
1	Vagbhatamandanam.
1	Yogaratnavali.
1	Ashtanga Hridaya Deepika (Vyakhyana Nidāna).
1	Rasaratnakara Vadakhandam.
1	Khagendramanidarpanam.
1	Vaidya Nighantu.
1	Rasakalpam.
1	Bheshaja Kalpa Paribhāsha.
1	Chetushasti Divyoushadhaguna.
1	Dravya Gunavalli.
1	Vaidyasaram.

Number.	Name of book.
	Madras Ayurvedic College—cont.
1	Sootha Deepika.
1	Ayurveda Arambha.
1	Rasapradeepika.
1	Vaidyasara Sanjeevani.
1	Dhanvantari Nighantu.
1	Ayurveda Rasayanam.
1	Vaidya Satasloka.
1	Vanoushadhi Varanam.
1	Pathyapathya Varanam.
1	Veerabhadreeyam.
1	Atreya Bheshaja Kalpam.
1	Kupinjali Thanthram.
1	Dakshinamurthi Nighantu.
1	Rasanighantu.
1	Dravya Nighantu.
1	Ayurveda Sutram.
1	Sarabharajeeyam.
1	Shatpada Nadee Lakshanam.
1	Rasaratnakararasayana Khandam.
1	Rasasaram.
1	Prasnothararatnamala.
1	Ananda Darpanam.
1	Madhava Nidanam Vyakhyanam.
1	Ayurveda Sutram.
1	Dravya Ratnakaram.
1	Bhojana Kuthoohalam.
1	Charucheryam (Vayama and Theeprakasika).
1	Nidana Yogaratnavali.
1	Vaidya Darpanam.
1	Surapathi Rasayanam.
1	Arkaprakasika.
1	Rasaparibhasha.
1	Sukshmatha Tika Sutra Sthana.
1	Sushmuna Dhwaja Pradeepa Adhyaya Praramba.
1	Sushmuna Sambava Amsandeepa.
1	Prakantha Bheshajeethyattu.
1	Ayurveda Sutram 5 Pannalu Vyakhanamu.

List of Malayalam Ayurvedic Works.

List prepared by Mr. K. Sankara Menon, M.A., L.T., Director of Ayurveda, Trivandrum.

(*a*) *Published works.*

1. Sahasrayogam (Sanskrit and Malayalam).
2. Sarva Rogachikitsaratnam (Sanskrit and Malayalam).
3. Sukhasadhakom (Sanskrit with Malayalam commentary).
4. Netra Chikitsa (Sanskrit).
5. Prayoga Samuchayam (Malayalam) Visha Vaidyam.
6. Visha Vaidya Sara Samgraham (Sanskrit).
7. Vaidya Sara Samgraham (Malayalam and Sanskrit).
8. Vaidya Samgraham (Malayalam and Sanskrit).
9. Yogaratnaprakasika (Malayalam and Sanskrit).
10. Rasaraja Vidhi (Malayalam and Sanskrit).
11. Vaidya Nikshapasamgraham (Malayalam and Sanskrit).

(*a*) *Published works*—cont.

12. Abalathantram (Sanskrit).
13. Balopacharaneeyam (Malayalam and Sanskrit).
14. Nidanam (Malayalam).
15. Gunapatom (do.).
16. Strirogachikitsaratnam (Malayalam and Sanskrit).
17. Yogamritham (Malayalam and Sanskrit).
18. Arogya Kalpadrumam (Sanskrit with Malayalam commentary).
19. Rasapakavidhi (Malayalam).
20. Ashtanga Samgraham Commentary Indu (Sanskrit).
21. Jyostnika (Malayalam and Sanskrit Visha Vaidyam).
22. Lakshnamrita (Sanskrit Visha Vaidyam).
23. Oushadha Nighantu (Dictionary).

List of Malayalam Ayurvedic Works—*cont.*

(b) Manuscripts.

Number.	Name of book.
1.	Ashtanga Hridayam Commentary.
	(1) Patyam (Sanskrit).
	(2) Brihat Patyam (Sanskrit).
	(3) Hridayabodhika (Sanskrit).
	(4) Kairali (Sanskrit) and names of herbs in Malayalam.
2.	Ashtanga Samgraham Commentary.
	(1) Jajjada (Sanskrit).
3.	Navakhandam (Sanskrit and Malayalam).
4.	Yogaratna Samuchayam (Sanskrit).
5.	Yoga Saram (Sanskrit and Malayalam).
6.	Rasa Saram (Sanskrit and Malayalam).
7.	Chikitsakramam (Sanskrit and Malayalam).
8.	Chikitsa Saram (Sanskrit and Malayalam).
9.	Chikitsa Manjiri (Sanskrit and Malayalam).
10.	Upadesa Sahasram (Malayalam).
11.	Dootha Lakshanam do.
12.	Swapna Vicharam do.
13.	Marana Lakshanam do.
14.	Sannipatha Chikitsa (Sanskrit and Malayalam).
15.	Vata Chikitsa (Malayalam).
16.	Ranaroga Chikitsa (Malayalam).
17.	Visha Chikitsa.
	(1) Visha Narayaneeyam (Sanskrit).
	(2) Do. Chintamani (Malayalam).
	(3) Kodaseri Bhasha do.
	(4) Visha Chikitsa Kramam (Malayalam).
	(5) Mantra Chikitsa (Malayalam).
	(6) Hara Mekhala (Sanskrit).
	(7) Narayaneeyam Kilipattu (Malayalam).
18.	Soothika Chikitsa (Malayalam).
19.	Rasayana Padhathi (Malayalam).
20.	Chikitsa Nool do.
21.	Ashta Vaidya Kramam (Sanskrit and Malayalam).
22.	Hridaya Bodhika (Sanskrit—partly published).
23.	Pancha Karma Prakaranam (Malayalam).
24.	Pindasweda Vidhi (Sanskrit and Malayalam).
25.	Snehasweda Vidhi (Sanskrit and Malayalam).
26.	Dhara Kalpam (Sanskrit and Malayalam).
27.	Pudapakavidhi.
28.	Sidha Yogam (Sanskrit).
29.	Dasamani do.
30.	Bhela Samhita (Sanskrit—readings different from the published works).
31.	Akaradi (Dictionary).
32.	Dosha Prakaranam (Prose—Malayalam).
33.	Dooshya Prakaranam (Prose—Malayalam).
34.	Kalpam (Sanskrit).
35.	Aswa Chikitsa (Malayalam)
36.	Gaja Chikitsa do.
37.	Pasu Chikitsa do.
38.	Janana Marana Vidhi (Malayalam).
39.	Dhatu Sodhana Margam do.
40.	Ottamoolika Prayogam (Sanskrit and Malayalam).

The famous works published in Bombay, Calcutta, etc., are not included in the list. Those Sanskrit works that are written by Malayalees but which are not published are mentioned here. The names of the published works are given separately. The old manuscripts that are seen in Malabar are useful compilations or original works. Yogaratna Samuchayam is a Sanskrit work of rare importance in which there are quotations from a hundred well-known Sanskrit authors, most of whose works are rarely seen.

List C—Unani Works.

*List of some of the most important books of the Unani system of medicine covering the whole ground in that knowledge.**

Tibb-i-Akbari, in Persian and Urdu.
Mojas (Arabic), also translated in Urdu.
Aqsarai (Arabic).
Sharah Asbab, Volume I (Arabic), also translated in Urdu.
Sharah Asbab, Volume II.
Kulliat-i-Qanun, abridged Urdu translation also exists.
Nafisi, Volume I } also translated in Urdu.
Do. ,, II. }
Hummiat-i-Qanun.
Zahrawi (Arabic), abridged translation in Urdu.

Note.—There are numerous other books in Arabic, Persian and Urdu on the Unani system of medicine dealing with the above subjects to an advanced degree but the books mentioned above are sufficient for School and College courses.

APPENDIX X.

G.O. No. 1351, P.H., dated 17th October 1921.

Read—the following papers :—

(i)

G.O. Mis. No. 964, P.H., dated 10th August 1921.

The Government have decided to appoint a committee consisting mainly of non-official gentlemen to report on the question of the recognition and encouragement of the indigenous systems of medicine in vogue in this Presidency. The object of the proposed inquiry is to afford the exponents of the Ayurvedic and the Unani systems an opportunity to state their case fully

* Extracted from " The Scheme of the Ayurvedic and U[illegible]i Tibbi College," Delhi.

in writing for scientific criticism and to justify State encouragement of these systems. Before formally constituting the committee, the Government desire that a preliminary programme of work should be drawn up for its guidance and that some indication should be given of the lines upon which the inquiry and report should proceed. For this purpose they consider that a chairman and a secretary should be nominated in advance and requested to draw up preliminary proposals. They are accordingly pleased to nominate Khan Bahadur Muhammad Usman Sahib Bahadur, M.L.C., as the Chairman and Mr. G. Srinivasamurti, B.A., B.L., M.B.C.M., as the Secretary of the proposed committee. The Government will be glad if the chairman and the secretary will draw up proposals as early as possible and submit them to the Government with an approximate estimate of the cost involved.

(By order of the Government, Ministry of Local Self-Government)

F. J. Richards,
Secretary to Government.

(ii)

Letter from Khan Bahadur Muhammad Usman Sahib Bahadur, B.A., M.L.C., Chairman of the Committee on the Indigenous Systems of Medicine, and Captain G. Srinivasamurti, B.A., B.L., M.B.C.M., Secretary to the Committee on the Indigenous Systems of Medicine, to the Secretary to Government, Ministry of Local Self-Government, Fort St. George, dated Madras, the 29th August 1921, No. M-3.

As desired by the Government in their G.O. Mis. No. 964, P.H., dated 10th August 1921, we have the honour to submit the following preliminary proposals, together with an approximate estimate of the cost involved, in connexion with the proposed inquiry on the indigenous systems of medicine.

2. The Government, in their said order, observe that the purpose of the proposed committee is "to report on the question of the recognition and encouragement of the indigenous systems of medicine in vogue in this Presidency." To enable the committee to report on this question, we consider it our first duty to prepare and furnish them with a "list of institutions and practitioners of indigenous systems in vogue in this Presidency," as such a list does not now seem to exist. We, therefore, propose to undertake immediately the preparation of two lists, as shown below :—

List A.

List of Ayurvedic and Unani institutions in Madras Presidency.

(1) Institutions for treatment of out-patients only.
(2) Institutions for treatment of in-patients and out-patients.
(3) *Teaching* institutions.
(4) Institutions for *special* disease, e.g., institutions for treatment of leprosy, consumption, nervous diseases, diseases of ear and so on.

List B.

List of practitioners in the Madras Presidency following, or proficient in, the Ayurvedic and Unani systems, with their qualifications.—A special note being made of those practitioners, if any, who are trained in the western system of medicine as well.

2. It seems to us that the only feasible way in which we can gather data for the proper preparation of these lists is by seeking the help and co-operation of local authorities, like the President of the Corporation of Madras, Presidents of Local Boards, Chairmen of Municipalities and Unions, Collectors, Revenue Divisional Officers and Tahsildars. We request the Government to arrange for the required information to be furnished to us, when we send round circulars to the various local authorities, requesting their help and co-operation.

3. The Government also observe in their aforesaid order "the object of the proposed inquiry is to afford the exponents of the Ayurvedic and Unani systems an opportunity to state their case fully in writing for scientific criticism and to justify State encouragement of these systems." It is known that experiments in State encouragement of these systems are already being tried in several Indian States like Hyderabad, Mysore, Baroda, Indore, Jaipur, Travancore, Cochin, Gondal, Rewa, Gwalior, etc.; it is also known that reputed institutions, attracting large numbers of patients or students (according as the institution is a hospital or a school) are situated in places outside Madras Presidency as, for example, at Delhi, Calcutta, Lucknow, etc. Furthermore, many reputed practitioners, best qualified to speak with authority on the subject, reside in places outside Madras Presidency and it is highly desirable we should try and obtain their evidence. These practitioners are broadly divisible into two classes :—

(*a*) *Practitioners proficient in both the indigenous and western systems of medicine.*—Such persons, for example, like Sir Bhalachandra Krishna, L.M. & S., and Dr. Deshmukh, M.D., both of Bombay and Mahamahopadhyaya Kaviraj Gananatha Sen, M.A., L.M. & S., and Kaviraj Yamini Bhushan Roy, M.A., M.B.C.M., both of Calcutta. We consider that it is from such persons that we can reasonably expect a statement of the case, couched in the language of modern science and calculated to stand modern 'scientific criticism', just the sort of evidence contemplated by the Government in the second sentence of their aforesaid order.

(*b*) *Reputed practitioners of indigenous systems with an all-India reputation for their learning and skill.*—If one may judge from the aristocratic and educated of their clientele as also from the princely fees they command, it is eminently desirable we should try to obtain their evidence.

We propose to prepare for the information of the committee a list of reputed institutions and practitioners outside the Madras Presidency on the same lines as those of lists A and B (mentioned in paragraph 2 above) which relate to Madras Presidency only, that is to say,

List C being the list of reputed Ayurvedic and Unani institutions arranged under the same heading as list A above.

List D being list of reputed practitioners following, or proficient in, the Ayurvedic and Unani systems of medicine, with their qualifications, a special note being made of those who are proficient in the western system as well.

We propose to gather information for the preparation of lists C and D by applying, through the proper channel, to the departmental heads of the various Indian States which are known to have extended State recognition and State encouragement to institutions of the indigenous system of medicine, and also to the various Governments where reputed institutions or practitioners are said to exist. We also propose to apply direct to institutions with an all-India membership of practitioners of indigenous systems, such, for example, as the All-India Ayurveda Mahamandal, the All-India Ayurveda Vidya peetah, etc.

4. Our programme of work will therefore be somewhat as under :—

(*a*) Preparation of lists, A, B, C and D.

(*b*) Preparation of a questionnaire to serve as a basis of enquiry. While the actual details of the questionnaire will have necessarily to be settled by the full committee, we have at the same time considered it necessary that the Secretary should draw up a preliminary memorandum for the information of the other members of the committee, incorporating such useful information on the subject of the present enquiry as he may be able to gather from reports, books, personal interviews and such other means.

(*c*) To send circulars to heads of institutions in list A and select persons in list B, as also select heads of institutions in list C and select persons in list D, inviting them to send the committee their written evidence on the subject under enquiry, with particular reference to the questionnaire that will be sent round to them ; they will also be invited either to appear themselves or to depute their representatives to appear before the committee, for purposes of being examined on their written evidence.

(*d*) *Examination of witnesses by the committee.*—We have carefully considered the question whether the committee should hold its sessions in Madras only or in four convenient centres, such as Bezwada, Madras, Madura and Calicut for the northern, central, southern and western districts, respectively. It has been suggested to us that this latter arrangement would be convenient to mufassal witnesses and would also effect some savings under the heading of 'travelling allowance to witnesses' ; as against this there is the consideration that what is gained under the head of 'travelling allowance to witnesses' is more than lost by increased travelling allowance to be paid to members of the committee, which consists mostly of Madras residents who draw no travelling allowance if the committee sits at Madras. Moreover, it seems to us that Madras is centrally and conveniently situated for the great majority of witnesses to attend and we therefore propose that the committee do hold its sessions in Madras only.

(*e*) *Inspection of Institutions—hospitals, schools, colleges, museums, libraries, botanical gardens and the like* where experiments are already in progress in the matter of affording medical relief and medical education, on the basis of indigenous systems of medicine. It goes without saying that a first-hand knowledge obtained from such an inspection will be of immense value to the committee in its work of laying down the lines of action along which State recognition and State encouragement of indigenous systems of medicine may safely proceed. It will also be obvious that such an inspection will afford the committee a far better idea than mere written reports do, of judging the present position and future possibilities of such institutions, especially in the matter of their curricula and hospital practice—whether they can be self-sufficient or will need the incorporation of some branches, at least, of the western system of medicine. It will also afford the committee an opportunity to interview such witnesses of weight and authority as could not appear at its sessions in Madras.

We have carefully considered the question whether the work of inspection is to be undertaken by the whole committee or by a part of it and come to the conclusion that a big roving commission is not, in this case, a feasible or practicable proposition ; we consider that a small sub-committee of three members (the chairman, the Secretary and another member of the committee) should be entrusted with this task and that the same sub-committee should visit all places, in order that, as far as possible comparison and collation of data may not be rendered difficult by the existence of diverse view-points.

(*f*) Drawing up of the report, making specific recommendations, on the following, among other questions :—

(i) *Medical relief.*—The lines along which State encouragement may safely proceed.

(ii) *Medical education.*—The lines along which the State may safely proceed in the matter of founding new institutions or recognizing existing ones.

(iii) *Medical registration.*—Conditions under which such registration may safely be undertaken.

APPROXIMATE ESTIMATE OF COST INVOLVED—PRELIMINARY EXPLANATIONS.

Staff.—From what has been stated above, it will be clear that from the very outset there will be a good deal of correspondence to be dealt with, which will be considerably increased when the questionnaire is sent round and answers begin to come in; later still, we will have to deal with records of oral evidence of witnesses appearing before the committee; we have also to transact some accounts from the very outset, while, later on, the travelling allowance bills of mufassal witnesses and members of the committee will have to be dealt with. For these reasons, we consider that we require, as our minimum requirement, at least two clerks, knowing typing, shorthand, book-keeping and accountancy; we have estimated their salary at Rs. 120 a month, the senior clerk to get Rs. 70 a month and the junior Rs. 50 a month.

Office and furniture.—No amounts are shown in the estimates under the headings of office rent and furniture. We request the Government to provide us with an office in the Secretariat Buildings, as also permission to use the committee room of the Council Chamber during the sessions of the full committee. We likewise request that necessary furniture may be supplied to us on *loan.*

Printing and Stationery.—We request that we may be permitted to have our printing done at the Government printing press and supplies of stationery (including one typewriting machine) drawn from the Government Stationery office; no amounts are therefore shown in the estimates under these headings.

Books.—It is understood that the books used by Rao Bahadur Dr. Koman during his investigations of indigenous drugs are now at the Secretariat (Ministry of Local Self-Government). We request that these books, together with two copies of Dr. Koman's report, be transferred to us on loan; we also request that we may be permitted the use of the Secretariat Library, for purposes of study and reference. We have also made a small provision of Rs. 150 only to be spent, if and when necessary, on the purchase of new publications—books, journals and the like.

The following estimates are prepared on the assumption that the work of the committee is to last, in the first instance, for six months only :—

Head of expenditure with details.	Amount.
	RS.
1. Staff—	
(*a*) Two clerks knowing typing, shorthand, book-keeping and accountancy at Rs. 70 a month for the senior clerk and Rs. 50 a month for the junior or Rs. 120 a month for both.	720
(*b*) Two peons at Rs. 15 a month each or Rs. 30 a month for both.	180
2. Office and furniture to be loaned from Government.	
3. Printing and Stationery— Printing to be done at Government Printing Press; supplies of Stationery (including one typewriting machine) to be drawn from Government stationery stores.	
4. Books (purchase of recent publications only)	150
5. Postage and telegraph	500
6. Travelling allowances and batta—	
(*a*) For mufassal witnesses	15,000
(*b*) For mufassal members of the committee	2,000
(*c*) For touring members of the committee	10,000

The estimates are prepared on the basis that in the matter of travelling allowance and batta all members of the committee, whether they are members of the Legislative Council or not, will be treated alike and on the same scale, viz., that of Members of the Legislative Council.

	RS.
7. Contingency and miscellaneous unforeseen expenditure	1,450
Total ..	30,000

To this is to be added the pay of the Secretary, which is not yet fixed.

Order—No. 1351, P.H., dated 17th October 1921.

In G.O. No. 964, P.H., dated 10th August 1921, the Government appointed a Chairman and a Secretary to the proposed committee on the indigenous systems of medicine to draw up preliminary proposals for the conduct of the enquiry. These proposals having now been received, the Government are pleased to constitute the full committee as shown below :—

(1) Khan Bahadur Muhammad Usman Sahib Bahadur, B.A., M.L.C. (Chairman).
(2) M.R.Ry. Rao Bahadur A. S. Krishna Rao Pantulu Garu, M.L.C.
(3) M.R.Ry. Rao Sahib U. Rama Rao Avargal, M.L.C.
(4) M.R.Ry. A. Lakshmipathi Garu, B.A., M.B.C.M.
(5) M.R.Ry. M. Subrahmanya Ayyar Avargal, B.A., M.B.C.M.
(6) M.R.Ry. K. G. Nateṣa Sastri Avargal, Venkataramana Dispensary, Mylapore.
(7) M.R.Ry. C. T. Arumugam Pillai Avargal, Ayurvedic Pharmacy, Georgetown.
(8) M.R.Ry. T. R. Ramachandra Ayyar Avargal, B.A., B.L.
(9) Mr. A. T. Palmer, M.L.C.
(10) Captain G. Srinivasamurti, B.A., B.L., M.B.C.M. (Secretary).

2. The headquarters of the committee will be at Madras. All members of the committee will be treated as first-class officers for the purpose of calculating travelling allowances admissible to them for journeys undertaken in connexion with the enquiry.

3. The programme of work outlined by the Chairman and the Secretary in their letter No. M-3, dated 29th August 1921, is generally approved. The detailed proposals contained in this letter will be dealt with separately.

(By order of the Government, Ministry of Local Self-Government)

F. J. Richards,
Secretary to Government.

To all members of the Committee.
,, the Surgeon-General.
,, the Accountant-General.
,, the Finance Department.
,, the Publicity Officer.
Editors' Table.